UNIVERSITY OF SASKATCHEWAN

College of Agriculture and Bioresources

GUIDE FOR THE PREPARATION OF A GRADUATE THESIS

General Information and Guidelines of the Department of Food and Bioproduct Sciences (FABS)

University of Saskatchewan

To be used in conjunction with the requirements of the College of Graduate and Postdoctoral Studies (CGPS).

Some sections are reproduced from the CGPS website or other CGPS materials.

(minor changes) **May 2017**

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1. GENERAL REMARKS

The thesis is a major component of M.Sc. and Ph.D. degree programs. A thesis is a written presentation on a subject, which the author prepares as a part of candidacy for his or her degree. The thesis reflects the student's ability to carry out independent and original research. The foremost requirement of a thesis is that it be a significant contribution to knowledge. This requirement should embody accurate research, effective presentation of the pertinent literature and research data, and correct use of formal scientific and scholarly English language. Although the thesis research is carried out under supervision, with some aspects being performed under collaborative circumstances, it must be demonstrable that the thesis is the product of work done independently. This is particularly the case for doctoral theses, in which the contribution to knowledge must be original, substantial and verifiable. Since theses are contributions to knowledge and are placed in the public domain, sound academic and ethical standards (e.g., no plagiarism) must be adhered to in their preparation and presentation.

Plagiarism is the presentation of the work or idea of another in such a way as to give others the impression that it is the work or idea of the presenter. Plagiarism is a serious offence and could jeopardize an entire academic career.

2. GUIDELINES FOR THE PREPARATION OF A THESIS

Students should read carefully the CGPS regulations (https://students.usask.ca/graduate/graduate-students.php#ThesisandDissertation) and should familiarize themselves with the particular thesis requirements of the Department of Food and Bioproduct Sciences as contained in this guide. If points are still unclear, a student should consult his or her supervisor and/or department graduate chair before proceeding with the preparation of the thesis.

If a thesis does not follow the prescribed format, is not on the required quality of paper, is not free of mechanical (e.g., spelling and grammatical) errors, is not of letter quality or is improperly bound, it will not be accepted and the Departmental recommendation for award of the degree will not be put forward until the acceptable standard has been met.

Specific requirements of the Department of Food and Bioproduct Sciences

A thesis written in good scholarly (formal) English is required for M.Sc. and Ph.D. programs. The thesis may be organized in either **traditional style** (Abstract, Introduction, Materials and Methods, Results, Discussion, etc.) or in **compilation of manuscripts style,** hereafter referred to as manuscript-style. In addition to the PDF of the thesis that is required by the College of Graduate and Postdoctoral Studies (M.Sc. and Ph.D.), **one hard bound copy, formatted as described in this guide, must be provided to the Department.** The bound copy will be provided to the Graduate Secretary for cataloguing and is required prior to Convocation.

In addition, the supervisor may request a bound copy. Also, the student is encouraged to obtain one or more bound copies for his or her personal use. As a matter of courtesy, the members of the advisory or examining committee may be provided with a soft bound copy. The cost associated with the printing and binding of a thesis is ultimately the responsibility of the student. However, you should consult with your supervisor as to his or her policy regarding financial support for preparation of the thesis.

2.1 General Form and Style

Form and style will differ from discipline to discipline. **The main point to bear in mind is consistency of form and style throughout the thesis.** Accepted rules of grammar must be followed, and forms of spelling and punctuation must be used with consistency. The form and style chosen may be Canadian, American or British, as approved by the Advisory Committee. It is the responsibility of the student, the supervisor and the Advisory Committee to ensure, before the thesis is approved for oral examination, that typographical errors have been eliminated and punctuation corrected, and that the language of the thesis reflects the highest standards of proper and scholarly expression.

The recommended length of the main body of an M.Sc. thesis is 75 to 150 pages. The recommended length of the main body of a Ph.D. thesis should be 100 to 250 pages. A thesis may be organized in either traditional-style or in manuscript-style. The main body of a **traditional-style thesis** will normally contain the following sections:

1) Introduction, including a statement of objectives and hypotheses
2) Literature Review, a critical review of the relevant literature
3) Materials and Methods
4) Results, which will include figures, diagrams and tables
5) Discussion, of results obtained (may be combined with 4) as Results and Discussion)
6) Summary and Conclusions, or Conclusions
7) References Cited.

In a **manuscript-style thesis**, the following additional sections and elements are required:

1) Short sections linking the various manuscripts
2) A general discussion of the manuscripts
3) Manuscripts should be modified to one style throughout, with figures and tables shown on the page following their first mention. One referencing style should be used throughout with all references compiled into **one combined section (reference list)** at the end of the thesis.
4) Any manuscript(s) which have been published or accepted for publication should include a footnote listing the authors, and permission must be obtained from the publisher to reprint, unless the publisher yields the private use to the author.

2.2 Paper and Printing

One type and brand name of paper must be used throughout the thesis for reasons of appearance and preservation. The standard paper size is 21.5 cm by 28 cm (8.5 inches x 11 inches) and the paper must be a good quality 20-lb bond with a hard, bright and even surface texture. **Laser printing is absolutely required.** All pages of all copies must be clean, clear and error-free showing letter-quality printing. All coloured orignials must be duplicated as such with a laser printer; black and white copies are not acceptable.

All typing and printing will normally be on one side of the paper only. **The copy bound for the department must be single-sided only.** Text should be justified on both the left- and right-hand sides. The body of the thesis should be **one-and-a-half spaced**, with the exception of footnotes, which are to be left-hand justified, and quotations, which must be single-spaced, centre-justified, indented and not enclosed in quotation marks. The bibliography, figures, legends and other items, such as appendices, should be single-spaced.

The font used must provide black, evenly spaced, neat and dense characters, the size of which must be 10 to 12 characters per inch. The preferred serif typeface is Times New Roman. The same font and size must be used throughout the thesis, although boldface type for headings and italics for emphasis are permitted. Some reduction of font size for the body of tables or footnotes is permitted, but the font should not be smaller than 10 point.

2.3 Margins

For binding purposes, a minimum of **2.5 cm** is required on all sides of each page, except for the first page of each chapter as noted below. Margin regulations must be met on all pages of the thesis, including pages with figures, tables or illustrations.

The top margin of the first page in each chapter should be **5 cm**. The prefatory pages, however, must have a top margin of **2.5 cm**.

2.4 Numbering of Pages

Each page in a thesis, including those in the appendices, must be numbered consecutively. Illustrative material is to be numbered as well as the text, including figure legends that appear on the page opposite an illustration. All page numbers should be placed at the midpoint of the bottom of the page, **1.5 cm** from the bottom.

Lower case Roman numerals (e.g., i, xii) are used for the prefatory pages and the numerals are placed in the middle of the page **1.5 cm** from the bottom. Each item in the prefatory sections should be on a separate page.

All pages of the main body of the thesis, beginning with the Introduction (Chapter 1) must be numbered consecutively with Arabic numerals (1, 2, 3, etc.). This includes pages containing illustrations, tables, bibliography and appendices. When landscape mode is used for pages containing figures, tables or illustrations, the page number position must be modified so that it appears at the bottom midpoint as on other pages. After all material has been assembled, the author of the thesis must check the work carefully for completeness, the order of the pages and sections, and correctness of pagination.

Some pagination errors to avoid include:
- don't allow a heading or the first line of a paragraph to be "orphaned" at the bottom of a page. Force a page break in this instance.
- check to ensure that the text flows properly around a page containing a table or figure, and be sure that the tables and figures are placed on the correct page.

2.5 Illustrative Material

2.5.1 Diagrams and Tables

At the outset, the author of a thesis should determine whether or not diagrams or tables will be presented and then decide how they should be organized and displayed. The presentation of illustrative material should be consistent throughout the thesis. All tables and figures should be numbered consecutively **within a chapter** using Arabic numerals (e.g., **Table 4-1 or Table 4.1**). Tables and figures should be dispersed throughout the body of the text. In each case, the table or figure should appear on the page immediately following the first text reference to it. Tables and figures may be placed in either portrait or landscape mode (see sections 7.9 and 7.10 for examples).

Accordingly, the legend may be moved to the facing page. However, whenever possible, titles of figures and tables should be on the same page as the figure or table. More than one figure may be placed on a page, provided that adequate space is available. Small tables or figures may be placed following the paragraph of their first mention (i.e., on the same page as the text); however, tables or figures that are more than 2/3 of the height of the page should be placed on a separate page. The format of all tables and figures is to be consistent throughout the thesis, whether traditional-style or manuscript-style. Journals use a variety of styles and formats for tables, figures, footnotes, etc. Any particular style or format may be used, subject to the approval of the Advisory Committee.

2.5.2 Photographs and Digital Images

Wherever possible, digital images made by a commercial colour laser printer should be used rather than photographs, since it is now possible to make these images as high in quality as photographs. Resolution of the images should be at least 600 dpi or higher. Publishers such as Wiley have detailed guides for electronic artwork, or check a journal in your discipline for more information.

2.5.3 Oversize Pages

Wherever possible, charts, graphs, maps and tables that are larger than the standard page size are to be size-reduced, rather than folded, in such a way that the material remains clearly legible. Excessively long tables, particularly those from computer printouts, should be placed in an appendix.

3. ARRANGEMENT OF CONTENTS

This section describes the contents and order of presentation of all elements/sections of the thesis. Note that CGPS forms are never bound with the thesis.

3.1 Title Page

The title page should contain the following information: the title of the thesis, the name of the CGPS program, the degree (M.Sc. or Ph.D., Applied Microbiology or Food Science) for which the thesis is submitted, the name of the department, the name of the institution, the full name of the author, the expected convocation year, and the copyright notation. The month and year are to appear in the copyright notation only. No other information should appear on the title page. See section 7.1 for a sample title page.

> Remember that the title page is **not** included in the numbering. Page i **must be** the Permission to Use page.

3.2 Permission to Use

Students hold copyright to their theses. The thesis will include a statement, in paragraph form, granting permission to use the thesis under specifically stated conditions and indicating the address of the position and department or college to which requests for such permission should be sent (see section 7.2 for a sample Permission to Use statement).

3.3 Abstract

The abstract should identify clearly and succinctly the scope, nature and purpose of the research, the methods used, the results obtained, the significance of the results or findings, and any conclusions. **The abstract should not exceed 350 words or 1750 characters. Use word count to verify the length.**

3.4 Permission to Reproduce

Students who have reproduced or used a "substantial part" of a work or other proprietary material in the thesis must obtain permission from the rights-holder. One definition of a substantial part of a work includes quotations of over 300 words from a book or 50 words from a journal, newspaper or magazine article (Wiley-Blackwell, 2011, http://authorservices.wiley.com/permission.asp, accessed August 30, 2011). Students must be aware that obtaining this permission may take some time and may require a fee. Allowance must be made for this.

> Note that scanning an image or obtaining a digital image or photograph from an outside source is considered reproduction and would require permission to use from the copyright holder. Items that are in the public domain, with an explicit statement that they may freely be reproduced, do not require permission, but the source should be acknowledged.

You may be able to avoid having to ask multiple rights-holders for permission by modifying tables before including them in your thesis, and by redrawing figures before inclusion, but you must indicate that it is 'adapted from a named author or source'. Adapted materials vary, depending on the source, in the amount of change (or adaptation) required, and it is best to be on the safe side and check with the copyright holder on its permission to reproduce policy in such circumstances.

In a manuscript-style thesis, you must obtain permission from the publisher to reproduce any manuscripts that have been accepted for publication prior to submission of the thesis PDF to CGPS. Keep a hard copy of any such permission in your files. One exception to this would be for work that was published in an "open access" journal, as in that instance, copyright remains with the author(s).

3.5 Acknowledgements

The content of this single page is left to the discretion of the author. It is suggested, however, that the page refer to guidance received by the author from his or her supervisor and Advisory Committee members. Reference should also be made to any financial assistance received to carry out the project. Any extraordinary assistance received by the student, in data collection or data analysis for example, should be properly acknowledged. **The acknowledgements should not exceed 250 words or 1250 characters (one page).**

3.6 Dedication

Inclusion of a dedication page is permitted.

3.7 Table of Contents

The Table of Contents must list and provide page references for all elements/sections of the thesis. For the text of the thesis, it will indicate chapters, sections and important subdivisions of each section. The numbering and format of material in the Table of Contents must be identical to the way this material appears in the text of the thesis. The title of each chapter or section should be written in **full capitals (full size) with no terminal punctuation.** The title of a subsection of a chapter should be in small letters, with the exception of the first letter of significant words (i.e., **use title case**). Page numbers should be right-hand justified (see sections 7.4 and 7.5 for sample Table of Contents sections).

3.8 List of Tables

The list of tables follows the Table of Contents page(s). This list includes the number of each table, the title and the page number. Use of a hanging indent style is preferred (see section 7.6 for examples).

3.9 List of Figures

The list of figures follows the List of Tables page(s). This list includes the number of each figure, the title (partially or in full) and the page number (see section 7.7 for examples).

3.10 List of Abbreviations

This list includes all non-standard and unconventional abbreviations that are used in the thesis. It follows the List of Figures page(s) (see section 7.8 for an example List of Abbreviations). Within the body of the thesis, write out any abbreviations in full at their first mention only.

3.11 Body of the Thesis

The organization of the body of the thesis should be discussed with the research supervisor(s). The number and title of each chapter or section must be in the same form as it appears in the Table of Contents. It is in the body of the thesis that the student presents and develops in an orderly fashion all significant aspects of the research project for which the degree is to be granted. The research data presented must be verified for accuracy, i.e., to ensure that no errors have been made in entering data in tables, figures, etc. The results must be presented in an effective manner using correct, scholarly English. It is necessary and ethical to appropriately credit references to others' published works, including precedent and historical benchmarks. Ideas obtained from other works should be paraphrased in the student's own words, with reference to the original author.

A direct quotation of less than three lines may be incorporated into the text using quotation marks. If the quotation is longer than three lines, it should be arranged in the following format: indented 1.5 cm from the left-hand margin and typed in a single space format without quotation marks. Any borrowed thoughts, expressions or use of non-original material must be acknowledged and documented, otherwise it may represent plagiarism.

Body of a traditional–style thesis

The body of a traditional-style thesis generally comprises the following chapters: Introduction, Literature Review, Materials and Methods, Results, Discussion (or Results and Discussion), Conclusions (or Summary and Conclusions), Recommendations for Future Study (optional chapter, may be included with conclusions), References, and Appendices (see the sample Table of Contents in section 7.4).

Body of a manuscript-style thesis

If a manuscript-style thesis is preferred, the following chapters or sections need to be included (see the sample Table of Contents in section 7.5):

- Introduction and Literature Review chapters summarizing and critiquing the research on the topic as a whole, and the rationale for the current study;
- Separate chapters for each manuscript or published paper (each chapter should include an Abstract, Introduction, Materials and Methods, Discussion (or Results and Discussion), Conclusions);
- A brief section following each manuscript chapter, indicating its relationship to the thesis in its entirety or to the next chapter;

- A General Discussion chapter which links the separate manuscripts and relates the student's research to the topic as a whole;
- A Conclusions chapter;
- A compilation of all References;
- Appendices may follow if desired.

Issues of copyright must be addressed should one or more of the manuscripts be accepted for publication or already in print. **A footnote must be provided on the first page of the chapter, indicating the list of authors and the complete journal citation.** Include the statement "reproduced with the permission of …" from the publisher. The contribution of each author may also be provided.

For a manuscript-style thesis, some formatting will need to be done to make the thesis as a whole more consistent and easier to follow. For example, one referencing style should be used throughout, with one reference list at the end of the thesis. Figure legends should be on the same page as the figure if space allows, or else on a facing page. Tables and figures should appear on the page immediately following their first mention in the text.

3.12 List of References or Bibliography

This list must contain every reference cited, mentioned or used in the text of the thesis. The references in this list should be arranged alphabetically. Multiple references from the same author would then be arranged by year. References not cited must not be listed in the bibliography. References to unpublished work of others or to personal communications with the author should be placed in the text, with the date indicated.

Often in a thesis, journal names are written out in full, but they may be abbreviated. For a manuscript-style thesis, all references are to be collated into one reference list at the end of thesis, with one citation style used throughout the thesis. The most important issues are to make sure that all references cited in the text are presented in the reference list, and that the citation format is consistent. See section 4.5 for more information on referencing styles.

3.13 Appendices

The purpose of an appendix is to include those research materials which are pertinent to the thesis, but which are either too lengthy or not essential to an understanding of the work that the student has presented. The types of material that may be contained in an appendix include:

- raw data for analysis, figures or tables;
- details of methods used on a specialized topic not of crucial importance to the discussion;
- computer programs or statistical outputs;
- illustrative material.

Journal articles used as chapters in the thesis and those by other authors should not be included in the appendix. Appendices should be numbered consecutively using capital letters of the alphabet. Pages of the appendices are numbered consecutively respecting the overall pagination of the thesis. Tables in the appendices should be numbered A1, A2, etc.

3.14 Vita

A brief biography/bibliography of the candidate is permitted.

4. SPECIFIC ITEMS

4.1 Title of the Thesis

A thesis will be a valuable source of information for other scholars only if it can be located easily. Modern retrieval systems use the words in the title and sometimes a few other descriptive words. It is essential that the title be meaningful and that it contain key terms descriptive of its contents. If possible, students should use word substitutes for formulae, symbols, superscripts, subscripts, Greek letters, etc. The title as it appears on the thesis cover and the title page must be identical. On the cover of the thesis, each line in the title must not exceed 26 characters, including spaces. When planning the title of the thesis, the student should bear in mind that most book binders charge extra for overly long titles (see section 7.3 for a sample bound cover of a thesis).

When a thesis title is lengthy, a short title not exceeding 40 characters, including spaces, is needed for the spine of the bound thesis. This should follow the wording of the original title as closely as possible. The author's last name and initials and year of convocation should also appear on the spine (see section 7.3 for a sample spine of the bound thesis).

4.2 Copyright and Subsequent Use of the Thesis

The author of a thesis claims copyright on the title page (see section 7.1) by using the appropriate notation. It is understood that any copying or publication of the thesis in any manner, in whole or in part, for financial gain requires the permission of the author. To remind readers that the thesis is protected by copyright, students must insert the paragraph statement of "Permission to Use" immediately after the title page (see sample Permission to Use statement in section 7.2).

Students hold copyright to their theses even when agreements have been reached with other parties regarding ownership of some portions of the research findings. Careful attention must be paid to any previous agreements signed regarding ownership of research data and materials. Consultation with the Office of Research Services and CGPS is recommended if there are any questions regarding patentable or commercializable material.

Students are reminded that they are required to respect standards of academic honesty and intellectual property in the case of all material used in the thesis. In order to do this, it is usually sufficient to use notes and bibliographical references. **When use is made of a substantial part of a source work, i.e., >30%, or of a copyrighted figure or table, it is necessary to obtain prior permission from the author or publisher**. Once permission is received for the use of a figure or table, etc. from a copyrighted source, then the statement **"Reproduced with permission of…"** or a similar statement must be used in the figure or table legend or footnote to indicate that permission was sought and received.

In some instances, it is easier (and faster) to redraw the figure or modify the table, and then one is able to say "modified from or adapted from" and avoid the need to obtain permission from the publisher. To be on the safe side however, it is always best to check with the copyright holder on such matters.

Copyright clearance may take several weeks or even months. Check the publisher's website for the appropriate form or email address to aid in the clearance process.

4.3 Equations

Each equation in a chapter is to be numbered consecutively and consistently using a decimal system, and is to be located near the right-hand margin. For example:

$$y = mx + b \qquad (5.1)$$

The numbers in parentheses are the chapter number and equation number, respectively. Each symbol used in the thesis text for the first time must be defined. When a large number of special symbols are used, it is permissible to tabulate them in a table or in a special appendix.

4.4 Footnotes and Endnotes

Following the advice of the supervisor(s), a student may use any appropriate combination of footnotes at the bottom of pages in the text, endnotes at the end of a chapter, and direct reference to the bibliography. The approach taken must be used consistently throughout the thesis. The font used in notes is usually the same in form and size as that used in the text, but may be one size smaller.

Information on chapters that consist of manuscripts that have been published previously should be placed in a footnote to the title of that chapter. The general placement of a footnote is as follows: Beneath the text, leaving one double-space, a solid line extending approximately 5 cm from the left-hand margin is drawn. The footnote number as shown in the text appears one single-space below this line. The first line is indented. One half-space below and one space to the right, the text of the footnote is typed using a single-spaced format. Footnote numbering must be done consecutively and separately for each chapter.

Graduate theses in the Department of Food and Bioproduct Sciences rarely use endnotes. Endnotes should appear at the end of a chapter. They should be single-spaced with double-spaces between notes. Endnote numbering must be done consecutively and separately for each chapter.

4.5 Referencing

The fundamental rule of good scholarship is that the research be complete, reliable and correct, with all sources duly acknowledged. While many references will be from the last decade, be sure to acknowledge earlier contributions, including original sources of methods. The purposes of a reference are to acknowledge the contributions of other authors and to enable readers to locate sources easily. The format used for references must be consistent throughout the thesis. A student is expected to use the style manual or convention approved by the advisory committee in his or her choice of format for notes and bibliography.

Common citation styles include those of the American Psychological Association (APA), Modern Languages Association (MLA) and Chicago/Turabian Citation Guide. The American Chemical Society (ACS) style is commonly used in chemistry. The Council of Science Editors (CSE) style is also used in the sciences. Use a style or convention that is common in the Applied Microbiology or Food Science disciplinary area, or that of a journal in which you are considering publishing. Consult the style guides for specific examples. Most are available in the reference section of the library or on-line.

Referencing internet sources has evolved over time. The common elements include the author or the name of the organization, year, descriptive name of the page, access date, and URL.

Examples of referencing for internet sources:
Farr D.F. and Rossman A.Y. 2010. Fungal Databases, Systematic Mycology and Microbiology Laboratory. ARS, USDA. Retrieved on January 30, 2011 from http://nt.ars-grin.gov/fungaldatabases/.

SMA - Saskatchewan Ministry of Agriculture. 2008. Varieties of grain crops, SaskSeed guide. SMA, Regina, Saskatchewan, Canada. Retrieved on November 30, 2010 from http://www.saskseed.ca/images/varieties2010.pdf.

The references in your bibliography should be arranged **alphabetically.** Multiple references from the same author should then be arranged by year, oldest first. These would then be followed by references with a second co-author, and then with multiple co-authors. Consult a style guide such as that from ACS for additional rules regarding order of references in the Bibliography. References not cited must not be listed.

In a thesis, journal names often are written out in full, but they may be abbreviated. The Chemical Abstracts Service Source Index (CASSI, www.cassi.cas.org) lists standard abbreviations for thousands of the most commonly cited science journals.

4.6 Layout of a Chapter

Each subsection in a chapter should be numbered and arranged in a manner to maximize clarity for the reader. The following format is suggested:

1. MARBLES
    1.1 Introduction to Marbles
    1.2 Marble Colours
        1.2.1 Blue Marbles
        1.2.2 Red Marbles

The numbering system used for different sections denotes the following: the first number refers to the chapter number (the chapter number is not to include "0", i.e., it is to be written as 1., not 1.0), the second number refers to the primary section number, and the third number refers to the secondary section number. Thus, the number 2.4.1 denotes chapter 2, primary section 4, and secondary section 1. All chapters should begin on a new page and should have a top margin of 5 cm, with the page number centred at the bottom.

4.7 Layout of a Table

Each table has a number and a title. The first number refers to the chapter number and the second refers to the number of the table in that chapter. The number and title of the table appear at the top of the table. The title of the table should be concise, yet descriptive of its contents. Provide enough detail in the table that it can "stand alone" and be intelligible without reference to the text. Table boxes and sub-boxes and their descriptive presentation must be carefully designed. All entries should include units of measurement (g/L, w/v, etc.). The table should be designed such that there are no single or double row or column tables containing a sparcity of data. All superscripts or subscripts appearing in the title or cells must be explained in footnotes to the table. The absence of data in a column can be indicated by a dash, ND or NA, for example, which again must be explained in the footnotes.

Tables must conform to the margin requirements of the thesis format. They should be centred between the left- and right-hand margins and, as appropriate, between the top and bottom of the page. The contents of the

table must be preceded and followed by a single solid line. Similarly, solid lines must appear at other appropriate places inside the table. **Vertical lines are to be avoided.** Tables can continue from one page to the next (repeat the title and header information with the word [cont'd] at the end.). The title of the table should be as short as possible but should be meaningful and indicate the major focus of the table. Ordinary rules of referencing and footnoting apply. The numbering of footnotes in the table is independent of that in the text. (See section 2.5 for advice on the presentation of tables. Also see section 7.9 for sample tables.)

Small tables (e.g. 2x3 variables) or figures may be placed following the paragraph of their first mention (i.e., on the same page as the text). However, tables or figures that are more than two-thirds the height of a page should be placed on a separate page. Colour in tables to show distinctive entries is be used sparingly. Rather, use bold or italics for emphasis.

Word processing hint – The location of page numbers for tables and figures is to be the same as for the other pages of the thesis, including pages where tables or figures are presented in landscape orientation. In such cases, you can use a white text box to cover where Microsoft Word places the page number automatically. Then, insert a text box where the page number should be, i.e., centred at the bottom of the page, and enter the page number, properly oriented.

4.8 Layout of a Figure

Each figure must have a number and a title. The numbering system used for tables is also used for figures. The number and title of the figure appear at the **bottom** of the figure in the figure caption. The figure caption should be descriptive and complete. Additional text may be used to define/describe the experimental conditions. As with a table, provide enough detail in the figure that it can "stand alone" and be intelligible without reference to the text. Both axes of the figure must be properly labelled and should include the units of measurement when needed. If a figure shows more than one relationship, each relationship should be properly labelled with the appropriate axis. (See section 2.6 for advice on the presentation of figures. Also see sample figures in section 7.10.) Figures must conform to the margin requirements of the thesis format. They should be centred between the left- and right-hand margins and, as appropriate, between the top and bottom of the page. Figures may have an inset showing particular enlargement or shrinkage of the figure. Figures containing panels should be labelled with capital letters in any of the four corners of a panel. Such labels, when on a photograph, must be visible, i.e., white letters on a black background, etc.

Use of colour in figures is acceptable, but use symbols or dashed lines or patterns as well so that no information is lost if the document is printed in black and white. Also, images should be at least 600 dpi. Lettering in figures and graphs should be no smaller that 10-point so that they are legible. Use one font consistently for all graphics.

Hint for designing graphics – Set up a figure master or template or modify an existing figure, so that all images are of the same style. Before you prepare all of your figures or tables, seek feedback from your supervisor(s) on the style of the first one. This will save time later!

4.9 Preparation of the Approved Thesis

All revisions required in the thesis must be made, verified by the author or a reader, and approved before preparation of the final version begins. It is the student's responsibility to prepare and assemble all materials for the thesis in accordance with University and CGPS regulations and to ensure that the thesis volume is

complete and in good order. The Department is under no obligation to provide financial, technical or secretarial assistance to graduate students for the preparation of their theses.

4.10 Binding the Thesis

An M.Sc. or Ph.D. candidate who has successfully completed his or her thesis oral examination and has made all of the revisions and corrections required by the Examining Committee, must submit **one bound copy** of the thesis to the Department of Food and Bioproduct Sciences by the date indicated in the Graduate Calendar preceding the Convocation (either Spring or Fall) in which he or she plans to receive the degree. Check with your supervisor and the Advisory Committee as to the need for additional hard or soft bound copies.

The Department of Food and Bioproduct Sciences requires that all theses be bound in a **maroon cover with gold lettering**. There are strict regulations regarding what information appears on the cover and spine and the form used for presenting this information. Lettering on the spine should be legible when the volume is laid face down on a shelf on its front cover. No extra decoration is to be used in any case (see section 7.3 for examples). The title which appears on the cover, will be in upper case only. The author's name will also be in upper case on the cover, in smaller letters. The date on the spine and the cover of the thesis must be the year of expected convocation. The preferred date on the title page in the copyright notation is the month and year of the successful defense (or date of thesis approval), e.g., December 2010.

Students should ask the bindery whether special characters (e.g., superscript, subscript, Greek letters, etc.) or alternate sized lettering are available. Underlining should be used for genera and species as italic font is not possible on the cover. The suggested bindery to use is Universal Bindery, 516 Duchess Street, Saskatoon, 306-652-8313.

4.11 Electronic Theses and Dissertations

The CGPS now requires that the thesis be submitted to them in the form of an electronic thesis or dissertation (ETD), by uploading the ETD to the University of Saskatchewan library system. Consult the CGPS website for the most recent information on this topic. The website also has templates for thesis formatting and other tips for thesis preparation. The CGPS has suggested that all margins for the ETD be set at 2.5 cm, which has become the Department's new standard. As of January 1, 2012, all margins are to be set at 2.5 cm (except for the top margin on the the first page of each chapter, which is to be 5 cm). For best readability as a PDF, normal body text should be twelve point (12 pt) and from the Times or Roman family of fonts. ETDs require a list of key words.

Hint for word processing - one tip for meeting the different requirements for page numbering is to create three Word documents and combine the PDF files later. First, create one Microsoft Word document as the Title Page (with no page numbering). Next, create a second Word document for the Permission to Use page and text that follows (using lower case Roman numerals for page numbering). Create a third Word document for the rest of the thesis using Arabic page numbering. Then, convert the three different Word documents to three different PDF documents and then combine. This may also be achieved by creating "sections" within one Microsoft word document.

4.12 Thesis Confidentiality

Electronic theses and dissertations are now available on-line to the worldwide research community within days of submission to the University of Saskatchewan library system. Following the agreement of the supervisor(s) and the departmental graduate chair, a student may request that the CGPS keep their research confidential for a period of time, which normally does not exceed 12 months. The reason(s) for the request (e.g., filing of a patent) must be specifically indicated.

PROOFREAD, PROOFREAD, PROOFREAD!

It is important to proofread the thesis carefully before submitting it to your supervisor(s), the advisory committee and/or CGPS. Proofreading is best done by reading the thesis or section several times.

- First, review the items the spell checker and grammar checker have identified.
- Then read the document line-by-line and word-by-word to pick up mistakes in grammar usage and spelling, etc. This step is best done on a printed document, and not on a computer screen.
- Next check that your tables and figures are accurate and consistent.
- Finally, verify that your references are cited correctly and are present in both the text and the reference list. Also, scan your table of contents for any inconsistencies in style and wording.

Anytime that you change a sentence, proofread it again to make sure that no new errors were introduced.

5. DISSERTATION SUMMARY - PH.D. STUDENTS ONLY

The College of Graduate and Postdoctoral Studies requires the Dissertation Summary at least **seven** days prior the defence. It is to be a maximum of four (4) pages in length and should be set out on standard 21.5 cm x 28 cm (8.5 inch x 11 inch) paper. The CGPS office will reduce the document into pamphlet format for distribution at the thesis defence. The original copy will be sent to Dissertation Abstracts International in Ann Arbor, Michigan.

The date on the front page should be listed as the year of convocation. The left-hand column for the Chair of the defence (first person listed under Examining Committee) should be left blank. The right-hand column should read “Dean/Associate Dean/Dean's Designate, Chair, College of Graduate and Postdoctoral Studies”. The CGPS will fill in the name of the chair once appointed. Fill in the remaining boxes with the names of the examining committee members. The Abstract section (second page) must not exceed 350 words, excluding the title. If this section exceeds the limit, it will be edited by Dissertation Abstracts International. As the author is the best person to edit, students are encouraged to adhere to this regulation. Publications listed in the final section may only be those that have been written by the author and are published or accepted for publication. Students may also include their M.Sc. thesis.

6. THE THESIS AS PART OF THE GRADUATE PROGRAM

Students are strongly advised to consult the *University Calendar*, *Graduate Student Handbook*, etc. for complete information on regulations. These regulations relate to a graduate program and indicate the rights and responsibilities of students, departments, research supervisors and advisory committees.

6.1 Permission to Write the Thesis

Permission to write the thesis is given by the Advisory Committee when there is general agreement that sufficient work on the research project as proposed has been carried out. This will normally occur after all course work and required examinations are completed, and the results of research findings are considered by the Committee.

6.2 Submission of the Draft Thesis

The supervisor is responsible for advising and assisting the candidate in preparing the thesis for submission. In the first instance, submission occurs to all members of the Advisory Committee. The supervisor is responsible for ensuring, within reasonable limits, that the thesis presented to the Advisory Committee is of an acceptable standard and quality for the degree sought. It is the shared responsibility of the student and the supervisor to ensure that the thesis is written in correct scholarly/scientific English, that it is free of errors in punctuation and typing, and that it respects academic standards and any conventions that are specific to the discipline. Proofread it one last time.

Before distribution, the student should consult with committee members as to their preferred format for the thesis, i.e., electronic as a Word document or PDF or in paper format.

It is the student's responsibility to prepare, assemble and distribute all materials in all copies of the thesis. The Advisory Committee shall evaluate the thesis in order to determine whether it is ready to proceed to evaluation by an external examiner. Generally, the Advisory Committee is allowed **three weeks** to review an M.Sc. thesis draft and **four weeks** for a Ph.D. thesis draft. **All** committee members must indicate that the thesis is ready for submission to an external examiner. It is not acceptable that examining committee members wait until the oral defence to indicate that they find the written thesis unsatisfactory.

The department head or graduate chair shall advise CGPS when a positive decision has been reached and the defence will then be scheduled. The department's notification will indicate the title of the thesis and will suggest names of proposed external examiners, with appropriate biographical information.

Care must be taken in proposing the names of external examiners to ensure there is no possibility of conflict of interest, either personal or professional in nature. Conflict of interest may arise in the following situations, among others: family or close personal relationships, situations involving disputes, reception of gifts, shared financial interests, and close or collaborative research relationships. Associate members of departments or colleges may not serve as external examiners in those units. In no case should the proposed examiner have had any previous association with the research results to be examined or have been contacted by the graduate student regarding the thesis. See the CGPS Manual of Procedures for a detailed list of potential conflicts of interest.

For an M.Sc. examination, **at least three weeks must be allowed** between the time that the defence date is set and the defence. This time is necessary to provide the external examiner sufficient opportunity to examine the thesis carefully. **At least four weeks must be allowed** in the case of a Ph.D. examination.

It is the student's responsibility to deliver copies of the thesis to members of the Advisory Committee. In the case of an M.Sc. examination, the student must provide **one additional copy** to the department. The department makes this copy available to the external examiner after the department has approved this person.

In the case of a Ph.D. examination, the student must provide **two copies of the thesis** to the department. The CGPS will send one of these to the external examiner, and the other will be made available to the person chairing the defence.

6.3 Preparation for the Exit Seminar and Oral Defence

In the Department of Food and Bioproduct Sciences, an exit seminar is delivered at the time of the oral defence. It is the responsibility of the student to prepare an exit seminar presenting the highlights of the research. The seminar should be about 40 minutes in length, with an additional five minutes allowed for questions. It is the responsibility of the research supervisor to provide advice and support to the student in preparing for the seminar and oral defence.

The oral defence should not be scheduled until all Advisory Committee members have formally agreed the thesis is ready for examination. In the case of an M.Sc. thesis defence, all arrangements are made by the department, subsequent to approving the appointment of the External Examiner proposed by the Advisory Committee and informing the CGPS that the thesis is ready for defence.

In the case of a Ph.D. thesis defence, the Programs Officer of the CGPS makes some of the arrangements. The graduate chair or department head will advise the CGPS that the Advisory Committee finds the thesis ready for defence, provides the title of the thesis, and provides names of proposed external examiners (along with necessary biographical and bibliographical information). Care must be taken to avoid any possible conflict of interest, whether personal, professional or financial. Once the external examiner has been appointed by the CGPS, the department generally makes arrangements for the seminar and defence locations, with paperwork provided by the CGPS.

6.4 The Oral Defence

Following the exit seminar (which is public), the student and Examining Committee proceed to a meeting room for the oral defence (closed to all but the Examining Committee). All members of the Examining Committee are expected to ask relevant and probing questions on the literature survey or review, methodology, results, discussion, conclusions and/or contents of the thesis, and/or on the research field. The candidate should respond to questions intelligently and directly in a manner that is informed by the methodology and the contents of the thesis, and as concisely as is appropriate to the question. The candidate should not hesitate to make clarifications should he or she have the impression that the question asked derives from a misconception about the research material or the literature. Generally there are two rounds of questioning, with the external examiner allowed to ask questions for as long as he/she desires; the time for questions from other members shall be limited to 10-15 minutes in each round (at the discretion of the Chair).

At the conclusion of the examination, the student will be asked to withdraw in order to allow examiners to deliberate. A student is judged on his or her ability to speak in an informed way about the research and to respond clearly and cogently to questions on the thesis (results and methodology) and on the thesis topic (knowledge of the academic field and related literature). Standards prevailing will be those of the discipline and of CGPS. The student will pass the Oral Defence if a majority of the members of the Examining Committee (including the research supervisor and the chair) vote in favour of acceptance, with provision for acceptance as presented, a requirement for minor or major revision, or rejection. An abstention is counted as a negative vote. If, however, the favourable majority does not include the external examiner, the Dean shall refer the case, along with the external examiner's written report, to the Academic (Master’s or Ph.D.) Committee for advice and recommendations on the action to be taken.

6.5 Submission of the Final Thesis

It is the responsibility of the student to make all revisions and corrections of the thesis as required by the Examining Committee. The research supervisor is expected to advise the student in making these changes and to verify that they have been made. If members of the Examining Committee have withheld their signatures on certification pages at the time of the Oral Defence, it is the responsibility of the research supervisor to ensure that they see the changes made to the thesis and to indicate on behalf of the Examining Committee that he or she deems the changes to be complete and appropriate. The Department of Food and Bioproduct Sciences requires **one bound printed copy** of the thesis, whereas the College of Gradaute and Postdoctoral Studies requires **an electronic copy (ETD) in PDF format**.

6.6 Convocation

The names of candidates who have completed all of the requirements for a particular degree are presented to the Graduate Faculty twice a year in preparation for Spring or Fall Convocation. Deadlines are set for the completion of requirements for each Convocation. All students wishing to receive their degrees after fulfilling all requirements must apply to graduate using the appropriate form (see CGPS website). It is the responsibility of students to ensure that all outstanding fees and other financial obligations to the University have been paid. Although outstanding fees will not prevent a student from going through the Convocation process, the student will not receive the parchment of the degree until all fees owing have been paid.

Convocation is an impressive ceremony. Students receiving graduate degrees should plan to attend. The Convocation Office sends detailed information on the ceremony to students in the month preceding convocation. Students should consult the University of Saskatchewan Bookstore or the University website for information regarding the type of academic regalia to be worn.

Students who receive a Master's or Ph.D. degree have reached a particularly high degree of achievement. In the case of the Ph.D. degree, the universities of Canada offer no higher degree for academic qualification.

Congratulations from the Department of Food and Bioproduct Sciences and the College of Graduate Postdoctoral Studies are extended to each successful candidate.

Keep in touch!

7. SAMPLES

7.1 Sample Title Page

THE STRUCTURE AND KINETICS OF

COLOURED MARBLES

A Thesis Submitted to the College of

Graduate and Postdoctoral Studies

in Partial Fulfillment of the Requirements

for the Degree of Doctor of Philosophy

in the Department of Leisure Activity

University of Saskatchewan

Saskatoon

By

Jane Marie Doe

2011

7.2 Sample Permission to Use Statement

PERMISSION TO USE

In presenting this thesis in partial fulfilment of the requirements for a Postgraduate degree from the University of Saskatchewan, I agree that the Libraries of this University may make it freely available for inspection. I further agree that permission for copying of this thesis in any manner, in whole or in part, for scholarly purposes may be granted by the professor or professors who supervised my thesis work or, in their absence, by the Head of the Department or the Dean of the College in which my thesis work was done. It is understood that any copying, publication, or use of this thesis or parts thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to the University of Saskatchewan in any scholarly use which may be made of any material in my thesis.

Requests for permission to copy or to make other use of material in this thesis in whole or part should be addressed to:

Head
Department of Food and Bioproduct Sciences
University of Saskatchewan
Saskatoon, Saskatchewan
Canada S7N 5A8

7.3 Sample Bound Cover of Thesis (and Spine)

EXTENDING THE SHELF LIFE OF A VALUE-ADDED MEAT PRODUCT: THE INFLUENCE OF MYOGLOBIN OXIDATION IN FRESH PORK SAUSAGES

JOSEPHINE KUSUMA

2008

MYOGLOBIN OXIDATON OF PORK SAUSAGES 2008 J. KUSUMA

7.4 Sample Table of Contents (traditional-style thesis)

TABLE OF CONTENTS

7.5 Sample Table of Contents (manuscript-style thesis)

TABLE OF CONTENTS

7.6 Sample List of Tables

LIST OF TABLES

(Modified from Gui, 2011)

7.7 Sample List of Figures (match style of Table and Figure numbering)

LIST OF FIGURES

(Modified from Tan, 2010)

7.8 Sample List of Abbreviations

LIST OF ABBREVIATIONS

One style:

AM: Arbuscular mycorrhiza

ANOSIM: Analysis of similarities

ANOVA: Analysis of variance

BG: Brilliant green (dye)

CLA: Carnation leaf agar (medium)

Another style:

DGGE	Denaturing gradient gel electrophoresis
DNA	Deoxyribonucleic acid
DSE	Dark septate endophyte (or endophytic) fungi
FABS	Food and Bioproduct Sciences
GINCO	Glomales international collection
Glo	Glomus
NSERC	Natural Sciences and Engineering Research Council

7.9 Sample Tables (these show different possible styles; use one style throughout)

Table 7-1 Nitrogen solubility and surface hydrophobicity of laboratory-prepared pea protein isolate (PPIn) and commercial pea protein isolate (PPIc) in the presence of 0.6 M NaCl. (Shand et al. (2011), unpublished data)

Sample	Nitrogen Solubility Index (%)[1]	Surface Hydrophobicity (S_o) ($S_o \times 10^7$) [1]
PPIn	70.0 ± 0.4[a]	22.7 ± 0.8[a]
PPIc	12.5 ± 0.5[b]	21.9 ± 0.2[a]

[1]Values expressed as mean ± SD of duplicate determinations.
[ab]Values with different letters in the same column differ significantly (P<0.05).

Table 7.2 Vitamin E concentrations of intramuscular fat from steers fed various dried distiller's grains (DDGS) diets (modified from Stoll, 2011).

Metabolite	Treatment				SEM*	*P*-value
		DDGS Diet				
	Control	Corn	Wheat	Corn and Wheat		
∑ Vitamin E (μg/g)	1.87[b]	2.54[a]	1.98[b]	2.15[ab]	0.14	0.006
α-Tocopherol	1.68	2.02	1.94	1.90	0.11	0.128
α-Tocotrienol	0.42	0.46	0.39	0.34	0.04	0.090
γ-Tocopherol	0.00[c]	0.40[a]	0.00[c]	0.16[b]	0.02	<0.001

*Pooled standard error of the mean
[ab]Means within the same column sharing a common letter are not significantly different at P<0.05

7.10 Sample Figures (These show different styles that can be used; use one style throughout the thesis. Note that some have been reduced in size for this guide.)

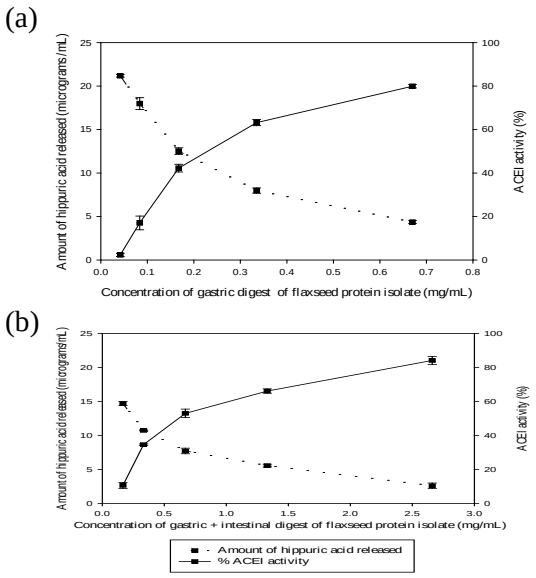

Figure 7-1 Release of hippuric acid(--------) and generation of angiotensin I-converting enzyme inhibitory activity (———) by the (a) gastric digest and (b) gastric + intestinal digest of flaxseed protein isolate in the assay mixture. Modified from Marambe (2011).

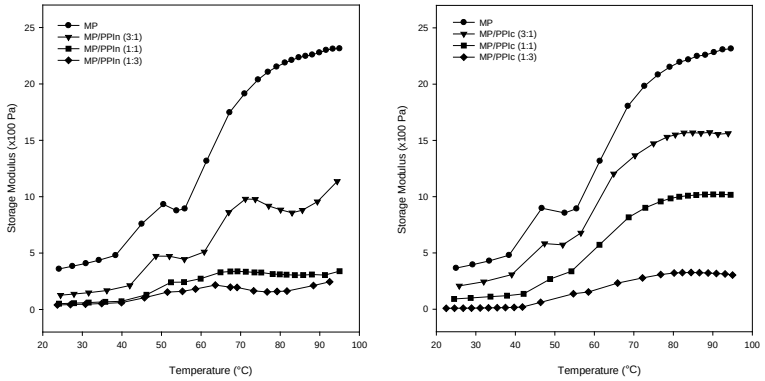

Figure 7.2 Storage modulus (G′) of the mixtures (12% total protein) of myofibrilalar protein (MP) and pea protein isolates at different ratios in 0.6M NaCl, 50 mM phosphate buffer (pH 6.5) during gelation. PPIn = laboratory pea protein isolate, PPIc = commercial pea protein isolate. Modified from Agyare et al. (2011).

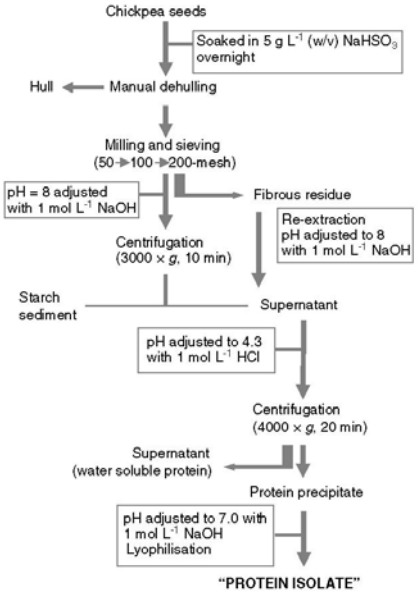

Figure 7-3 Flow-chart for isolation of chickpea protein isolate by wet processing. Modified from Withana-Gamage et al. (2010).

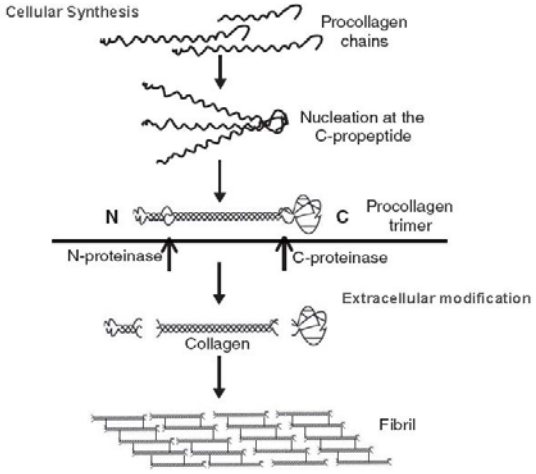

Figure 2.3 Process of collagen fibrillogenesis. Procollagen, the precursor of collagen is synthesized in the endoplasmic reticulum and assembled into triers before being transported into th extra cellular space. The initiation of fibrillogenesis is the truncation of N and C terminal peptides. Truncation may take place on the plasma membrane or extra cellular space. Fibrils are stabilized through crosslinks. Figure 2 of Canty and Kadler (2005) adapted with kind permission from the Journal of Cell Science.

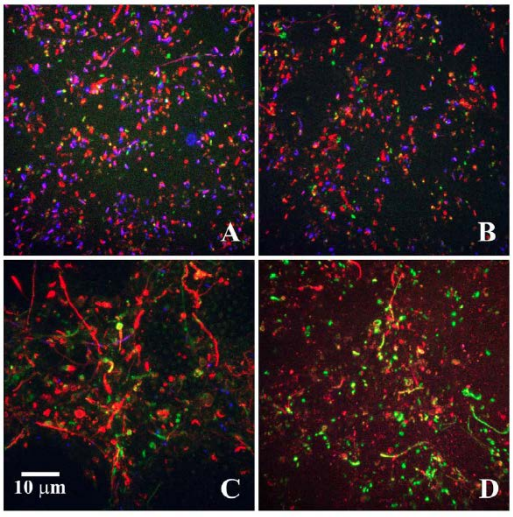

Figure 3.4.6. Representative projected micrographs of lectin-binding analyses, demonstrating the glycoconjugate composition of EPS in 168 h low-flow (A and B) and high-flow (C and D) biofilms of 0 to 15 µm and 0 to 45 µm biofilm thickness, respectively. The GalNAc residues of EPS are bound by *Glycine max*-CY5 conjugate (blue), α-L-fucose residues are bound by *Ulex europaeus*-FITC conjugate (green), and GlcNAc2 and NeuNAc residues are bound by *Triticum vulgaris*-TRITC conjugate (red). The italicized name indicates the lectin from the source plant, followed by the acronym indicating the labeled fluorescent dye.

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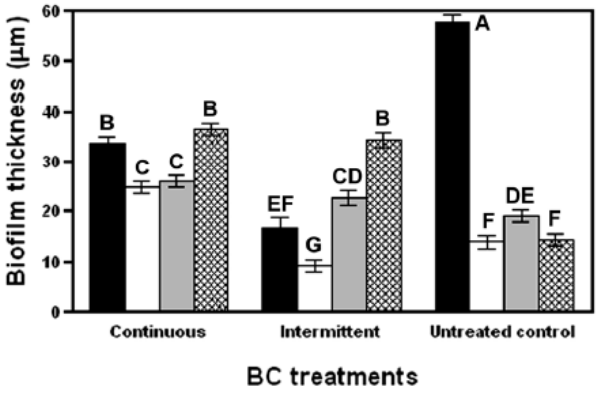

Figure 5.4.2. Thickness of biofilms treated either continuously or intermittently with sub-lethal concentration of BC, or that of the untreated control. The thickness measurements at each time interval are the average of 225 thickness measurements made at random locations from three biofilms replicated experimentally. The symbol (■) indicates average thickness at 168 h before lethal BC treatment (500 µg ml^{-1}), (▭) indicates average thickness immediately after lethal treatment, (▭) indicates average thickness 24 h after lethal treatment, and (▨) indicates average thickness after continuous treatment with BC (5 µg ml^{-1}). The bars indicating the average thickness values within a different letter group(s) are significantly different from each other at $P < 0.05$. The error bars indicate the standard error of the mean.

(Reproduced with permission from Korber et al. , 2011)