TCMG / BMEG 535

Foundations of Biotech Sciences & Management

Fall 2015

08/24/2015 – 12/04/2015

Course Syllabus

Tuesday 9:45-12:15 pm, Room: Tech 163
TCMG535fall15@gmail.com

Instructor: Christian Bach
Ph.D., MBA, MS Biochemistry
Room: Tech Building 153
cbach@bridgeport.edu

Office Hours:
Monday: (by appointment)
Tuesday: 12:00 am -1:00 am, 5:00 – 6:00 pm (and by appointment)
Wednesday, Thursday, 10:00 – 12:00 pm Friday: (by appointment)

Course Overview

This course defines biotechnology as the application of molecular biology for useful purposes. It simulates the real world science and business environments: Information and knowledge are complex, highly specific, fragmented, diverse and vast. No one individual or group is able to cover in-depth the entire science and business continuum to succeed and create value to society at large. Value creation has three different aspects: data, information and knowledge assimilation, degree of collaboration and methodology to establish successful knowledge management and business processes. The continuum of the biotechnology industry is shaped by scientific, legal, regulatory, social, economic, technological, political, financial and commercial factors. Understanding the dynamics and linked contributions of the interdisciplinary array of factors which affect commercialization of bioscience discoveries is essential to operate in the biotechnology industry. In this course we are dissecting the biotechnology industry to isolate the key drivers and study their interactions.
Discoveries in science and exponential developments in technology combined with financial resources offer many entrepreneurial opportunities. The ability to manipulate the genetic code of organisms has set off an industrial convergence: farmers, physicians, drug makers, chemical processors, computer and communications companies, energy companies and many other commercial enterprises will converge into the largest global integrated and interdependent industry. Bioentrepreneurship is a dynamic and social process, where researchers, physicians, computer scientists, business scholars and practitioners, financiers, attorneys, and other contributors individually or in interdisciplinary collaboration, identify or create opportunities and realize inventions to create value. Knowledge, its elucidation, creation, transformation, dissemination and utilization is the unlimited key resource that drives and sustains the diverse businesses.

In this course students are required to demonstrate the ability to investigate interdisciplinary science and management issues in-depth and independently. The objective of course exercises and assignments is to improve individual’s competitiveness in the job market. Through intense practice of presentation and articulation skills students are offered the opportunity to improve their personal confidence and professional appearance.

As a UB policy, it is expected that each student that attends one hour of classroom instruction will require a minimum of two hours of out of class student work each week for approximately fifteen weeks for one semester.

Course Learning Objectives

**Learning by doing:**
- **Practice presentation and articulation** to acquire and build personal confidence in order to successfully compete in the market place – know how to sell yourself
- Acquire knowledge and confidence through accountable individual work and contributions to the team
- Understand the key components of the biotechnology industry
- Identify and analyze the key enabling technologies in order to make paradigm changing discoveries, inventions and products
- Analyze and present articles and book chapters
- Write individual science report
- Use online genomic databases
- Use online libraries
- Identify business opportunities
- Define and analyze market opportunities
- Understand the transforming impact of biotechnology on industries and society
- Understand the transforming power of biotech products
- Review the tools, processes, techniques and competencies required to be effective bioentrepreneur
- Review and apply the scientific, legal, regulatory, social, economic, technological, political, financial and commercial factors
- Complete a detailed science-based business plan of a scientific product or services

Text Books and Software

**Book 1:**

**Book 2 (optional):**


**Endnote: recommended**
Each student must buy an Endnote software:

Additional handouts will be provided in class and/or must be downloaded from the course website on Blackboard. **The handouts must be brought to class.** A three-ring loose leaf binder is suggested to hold the reference materials.

**Complementary Texts:**

Additional readings will be handed out or posted on the Blackboard.

**Course Requirements**

1. **Class Attendance, Participation, Punctuality, Cheating and Plagiarism:**
Timely attendance at each class session is expected. Class lectures complement, but do not duplicate textbook information. Together students and instructor will create an interactive learning environment. Students must be on-time for class. A significant portion of your learning will accrue through the constructive and respectful exchange of ideas and search for alternative solutions. You must be actively engaged in class discussions to improve your thinking and communication skills.

   It is the student's responsibility to familiarize himself or herself with and adhere to the standards set forth in the policies on cheating and plagiarism as defined in Chapters 2 and 5 of the Key to UB [http://www.bridgeport.edu/pages/2623.asp](http://www.bridgeport.edu/pages/2623.asp) or the appropriate graduate program handbook.

   Always cite your sources and references in APA style. For information about how to cite visit: [http://owl.english.purdue.edu/owl/resource/560/01/](http://owl.english.purdue.edu/owl/resource/560/01/) or [http://www.dianahacker.com/resdoc/p04_c09_s2.html#13](http://www.dianahacker.com/resdoc/p04_c09_s2.html#13)

   Be certain that your travel arrangements do NOT conflict with any of your team or individual presentations.

2. **Preparation, Deadlines and Late Policy:**
No late submissions. Don’t wait until the last minute.

3. **Homework:**
The syllabus identifies the oral and written homework assignments. Each written assignment must be typed and only one or two pages long. Late submissions have 20% penalty per day.

Homework must be submitted for grading two days before class session (deadline: Sunday noon) by email: TCG535fall13@gmail.com – no late submission accepted

All students are required to submit four (5) written homework assignments on topics identified in the syllabus. Students must be prepared to present their material in class. Each homework assignment must include:

1. **Title/Topic** - State the title of selected topic
2. **Body Text** - Summarize the key issues and facts of the topic:
   a. select and quote 1-2 statements from the assigned articles ((1) copy/paste, (2) quote “ … “, (3) ref with page number)
   b. explain the quoted statements in your own words (your can use other material and articles)
3. Formulate and answer two (2) questions and present in class (e.g. What information does a gene contain?)
4. **Importance Statement** – Why is this topic important?
5. **Sources**: cite at least one source (book, article, web-site) in APA style
   a. Cite book in-text: e.g. - (Klug et al., 2009) p. xx (page number of your choosing)

**Important**: Make sure your case covers all 5 points above in separate sections!

**Homework structure (mandatory):**

1. Name
2. Title (title of article)
3. Summary including in-text citation
4. Two questions and answers (in quotes "... (Hanna07) p. xxxx") including in-text citation
5. Importance Statement: copy/paste a statement, put it into quotes and comment on it in you own words (see example) and including in-text citation
6. Endnote library (perfect format, no spelling errors)

**Homework Example:**

TCMG / BME 535 spring2010: Homework 1
Name: C. Bach
Title: Treatment of Sickle Cell Anemia with induced Pluripotent Stem (iPS) Cells
Summary
The authors Hanna (2007) show that mice can be rescued from sickle cell anemia after transplantation with hematopoietic progenitors obtained in vitro from autologous iPS cells. This was achieved after correction of the human sickle hemoglobin allele by gene-specific targeting. Their results provide proof of principle for using transcription factor–induced reprogramming combined with gene and cell therapy for disease treatment in mice. The problems associated with using retroviruses and oncogenes for reprogramming need to be resolved before iPS cells can be considered for human therapy. These results indicate that the method designed by Hanna (2007) can treat sickle cell anemia in mice, but still several problems are to be overcome to apply this therapy to humans (Hanna et al., 2007).

Q.1: Why iPS cells were infected with an adenovirus encoding Cre recombinase?
A.1: “To reduce the potential risk of tumor formation due to c-Myc transgene expression, iPS cells were infected with an adenovirus encoding Cre recombinase to delete the lentivirus-transduced c-Myc copies (Hanna et al., 2007) p. 1922.”

Q.2: What was done to achieve specific gene targeting?
A.2: “To achieve specific gene correction of the hβS alleles, iPS #3.3 cells were electroporated with a targeting construct containing the human βA wildtype globin gene (Hanna et al., 2007) p. 1922.”

**Importance Statement:**
According to Hanna (2007):“The correction of sickle cell anemia described in our experiments indicates that harnessing autologous iPS-derived cells for therapeutic purposes recapitulates several of the promises offered previously by SCNT: (i) no requirement for administration of immunosuppressive drugs to prevent rejection of the unmatched transplanted cells, (ii) the opportunity to repair genetic defects by homologous recombination, and (iii) the opportunity to repeatedly differentiate iPS cells into the desired cell type for continued therapy (Hanna et al., 2007) p. 1923.”

This means, as the authors mentioned in the abstract, that the results deliver proof of concept that transcription factors can be used to induce reprogramming via homologous recombination of defective genes thus healing the disease in mice. However, the use of retroviruses and oncogenes to produce induced Pluripotent Stem (iPS) cells needs to be resolved before clinical applications can be recommended.

**References:**

The following list contains journals and articles you can use for citation/reference.

**JOURNALS**

**Journal of Commercial Biotechnology** (Meyers, 2008)

2009
(Avellanet, 2009; Badman, 2009; Boni, 2009; Brëvignon-Dodin & Singh, 2009; Brëvignon-Dodin & Singh, 2009; Chanvarasuth & Indaraprasirt, 2009; Friedman, 2009; King, 2009; Lief & Schuyler, 2009; Miller, 2009; York, McCarthy, & Darnold, 2009)

2008
(Ahn & Meeks, 2008; Avellanet, 2008a, 2008b; DeKoven, Hazard, Goldberg, & Pokras, 2008; Friedman, 2008b; Glick, 2008; Heinonen & Sandberg, 2008; Jensen, 2008; Korwek, 2008; Lydecker, 2008; Meyers, 2008; Meyers & Hurley, 2008; Meyers, McCubbrey, & Watson, 2008)

2007
(Bains, 2007; Behnk & Hültenschmidt, 2007; Cartmell, 2007; Cosh, Girling, Lilford, McAteer, & Young, 2007; Frahm, Ireland, & Hine, 2007; Genieser & Gollin, 2007; Greco, 2007; Kowalski, 2007; Li, 2007; McCarthy, Pitt, Campbell, van der Merwe, & Salehi-Sangeri, 2007; Ohba & Figueiredo, 2007; Skrepnek & Sarnowski, 2007; Vanderbyl & Kobelak, 2007; Williams, 2007)

**International Journal of Biotechnology** (Gurau, 2006), (Milne, 2008)


**Complementary Sources:**

4. **Team Academic/Business Report on a Biotech Case & Causal Model:**

**Science Project**

During the first session 8 teams (2-4 members) will be formed. **Each team** will be assigned one of the following topics:

1) Case  
2) Case  
3) Case  
4) Case  
5) Case  
6) Case  
7) Case  
8) Case

**Each team** will prepare a term project on an assigned biotech topic (20-30 pages, double space, 12 point, Times New Roman). The Team must properly **use and cite in-text 20-30 academic articles from academic journals and list the references at the end of the paper in mandatory APA style.** The team can use articles that have been distributed by the instructor.

All sources (**pages** from articles, books, web pages, etc.) used for the paper **must be turned into pdf** and emailed together with the project submission— make sure that you cite the **sources in the text with page number** of the paper and reference them at the end of the paper in APA style.

The team must email following files **two days before** beginning of the last session to TCMG535fall13@gmail.com:

1. **PowerPoint presentation**
2. **Written paper**
3. **Sources as pdf files (articles, web pages, etc.)**  
   - Cite sources properly in-text including page numbers  
   - List references (articles, books, web pages, etc.) in mandatory APA style at the end of the paper

To receive a high grade, **every member of the group must equally participate in the presentation, its preparation and delivery.**
5. **Individual Academic/Business Report on a Biotech Case & Causal 4-Factor Model:**

Each student will prepare a written academic report (2000 – 4000 words, 12 point, Times New Roman) on a marketing topic. Students collect 3 academic journal articles on the topic of their choice and write a report on the authors’ empirical findings and opinions about the topic and use real world cases (e.g. from Armstrong/Kotler textbook) to discuss the selected marketing factors and concepts (usefulness, pro/cons, etc.) while stating their own opinions, arguments, recommendations and conclusion. An executive summary will be presented to class using 1-2 Power Point Posters.

You may select from the suggested topics listed in the syllabus or submit your own topic for approval by the instructor. **The paper must be well written, typed and page numbered, be supported by research, contain references and be consistent with graduation from a graduate program.** All papers must be based on a real company or company case study.

You can use articles that have been distributed by the instructor. All sources (pages from articles, books, web pages, etc.) you are using for the paper **must be cited in-text including page numbers** and be references at the end of the paper in APA style.

**The Report must contain** (2000-4000 words, or more):

1. **Table of content**
2. **Executive Summary/Abstract** (no references)
3. **Introduction/Importance of Research**
4. **Design/methodology/approach:** e.g. normative research, conceptual research, action research, case study research, grounded theory, ethnography, emic/etic research,
   a. Define normative research
   b. Explain normative research
   c. Use normative research approach for explaining your model
5. **Write a section about the Scientific Method:** Ch1 (Kerlinger & Lee, 2000) (add/use 5+ references)
   a. What is the Scientific Method? (300-500 words from quoted material and comment on quoted material in your own words)
   b. Collect and quote definitions and discuss underlying Philosophies
   c. Make a table of definitions you have found in articles (use quote and cite with page number)
6. **Write a section about the Relations:** Ch5 (Kerlinger & Lee, 2000) (add/use 5+ references)
   a. What is the Relations? (300-500 words from quoted material and comment on quoted material in your own words)
   b. Write about dependent and independent variables of the model on page 99
   c. Collect and quote definitions and discuss underlying Philosophies
   d. Make a table of definitions you have found in articles (use quote and cite with page number)
7. **Write a section about a Topic of your choice from an article from “Journal of Commercial Biotechnology”** (5+ references)
   a. What is Biotechnology? (300-500 own words) (Gurau, 2006), (D. Hine & Griffiths, 2004),
   b. Collect and quote definitions of the word “Biotechnology” and related words (up to 800 words) and discuss underlying Philosophies
   c. Add list of definitions you have found in articles (use quote and cite with page number)
8. **Explanation of Model and Analytical Reflections** on its factors and goal (Schön, 1983)
   a. At least one article must be from the “Journal of Commercial Biotechnology”
   b. Explain each causal link in the model (explain each hypothesis, its virtue, importance and impact)
   c. Explain the normative causal impact of each factor (independent variable) on the goal/objective (independent variable)
   d. Define the independent and dependent variables by citing two or more references)
9. **Importance of Model/Research and Potential Impact on Organization/Society**
10. **Conclusion/Discussion** (including: Recommendations/Implications/Lessons Learned, Impact on Organization/Society)
11. The student must properly use and cite in the text 20-30 references in the paper – 20-60 references are the norm for publications.
12. Endnote library with complete references in mandatory APA-style.

Abstract Example:

Purpose – This paper aims to review how current policy instruments drive (or not) environmental innovation and, by doing so, to reinvestigate the relationship between innovation and regulation.

Design/methodology/approach – A comprehensive literature review on innovation and environmental regulation created a theoretical foundation of the paper. Using the grounded theory, a model was developed and evaluated using interviews. This is a timely topic as the new shape of recent environmental regulation appears to be fairly strict. A new model is presented to encapsulate highly dynamic interaction of environmental innovation and regulation to provide results that reflect on the present innovation behavior and its implications.

Findings – The model highlights various diffusion pathways that are triggered by the main three drivers of innovation namely government (regulation), market (competition and cost) and technology which has the possibility of an autonomous diffusion.

Research limitations/implications – The empirical data are limited to 13 qualitative experts’ interviews within industry, consultancies and governmental departments.

Practical implications – The suggested model is particularly useful for policy makers to better understand the innovation dynamics and its diffusion pathways to design smarter regulations that incentivize rather than force organizations to comply with regulation.

Originality/value – The paper shows how regulation drives (or not) innovation and how various diffusion pathways can be used by external stakeholders to direct and promote innovation.


Each student will present the executive summary of their paper to the class and submit:

2. Upload to TurnItIn
3. Power Point poster
4. Email pdf files of 3 articles and other sources (web pages, etc.)
   - Cite sources properly in-text including page numbers
   - List references (articles, books, web pages, etc.) in mandatory APA style at the end of the paper

Students are required to upload their papers into Turn-It-In before submission.

Grading Guidelines:
Mandatory points considered for final grading (individual academic report and team project):
1. Number of journal articles and factor: 20-30 journal articles and 4 factors, the more the higher the grade
2. Endnote proficiency: spelling errors (names, titles, use of capital letters), completeness (e.g., author, year, title, journal, issue, volume, pages), complete journal names, APA style, number of referenced journal articles (at least 10), number and proper use of in-text citations.
3. Turn-It-In: upload at TurnItIn.com (under 10% excluding references and quotes, at least 2000 own words)
4. Completeness of submitted material: Email pdf files of articles used in the paper (at least 3-5 main articles)
5. Proper format and use of quotations and quoted material: in-text citations with page number, etc. (all references in the Endnote library must be properly cited in the text of the paper).
6. Quality of remarks: Explanation of quoted material (in your own words)
7. **Paper structure**: Title, Abstract/Executive Summary, Keywords, Introduction, Body Text arrangement (figures, tables, useful drawings/pictures, etc. to guide the reader and explain), Conclusion (importance of topic, lessons learned, recommendations, future research)

8. **Model**: consistency of model, quality of hypotheses, in addition quality of:
   a. What did I learn about Marketing? (150-300 own words)
   b. Add list of 5-15 definitions you have found in articles (use quote and cite with page number)

9. **2/3 of report must contain of own language**: Use cases and commonsense examples to explain and persuade

10. **Content**: Persuasiveness of importance and arguments

11. **Presentation**: Persuasiveness of model’s importance in a real business environment (sell the model and yourself)

**Poster Presentation Guidelines:**
Points considered for enhancing communication skills:
1. **Quality of presentation**: persuasiveness, articulation, confidence
2. **Timeliness of submission**

**Topics for Academic Individual Biotech/Business Report:**
- Select topic from articles of the *Journal of Commercial Biotechnology*

**Evaluation**

Class Participation, News & Attendance 10 %
Team Project 20 %
Homework Assignments 10 %
Academic Assignments 20 %
Individual Academic Report and Presentations 40 %
Total 100 %

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Point/Grade conversion for Homework and Assignments

Make sure you address the all points properly.

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<tr>
<th>Grading Guidelines</th>
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<td>1. Model format and consistency</td>
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<td>2. In-text citations</td>
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<td>3. English</td>
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<td>4. Abstract Structure</td>
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<td>5. Methodology section</td>
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<td>6. Content quality</td>
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<td>7. Introduction section</td>
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<td>9. Impact clarity</td>
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<td>10. Conclusion section</td>
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<td>11. References quality</td>
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<td>12. Endnote library</td>
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Course Policies

- Ethics policy - Don't lie or cheat.
- Open book policy - If you don't open your books, you don't participate.
- You need to buy the textbook!
- Read the syllabus.
- Read exam question before answering it.
- The syllabus is tentative. Report errors or omissions in the syllabus. – Don’t use them as excuse.
- In-class announcements are the rule – not the syllabus.

Course Structure

Lecturing is only one of the three approaches used in this course. Knowledge will be acquired through facilitated case/article discussions and student presentations. Students are expected to engage actively in preparing for and presenting the case materials. For completing the assignment and project, students may need to do additional research, and look for information and knowledge that is not covered by the textbook and the lectures. It is assumed that a major learning objective for this course is to cultivate students’ capability in searching, identifying, evaluation, using, and integrating relevant knowledge that may or may not be provided in the class.

Schedule & Assignments

<table>
<thead>
<tr>
<th>Date</th>
<th>Topics and Assignments</th>
<th>Reading (before class)</th>
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<tbody>
<tr>
<td>Session #1</td>
<td>Course set up:</td>
<td>Biosciences and Bioentrechnology</td>
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<td>- Submission is mandatory due at each Sunday 12:00 for all Posters, Assignments and Homework: <a href="mailto:TCMG535fall13@gmail.com">TCMG535fall13@gmail.com</a> 20% grade reduction for submission until Sunday midnight; 50% for submission after Sunday midnight. - GA will upload the material on BlackBoard – be on time - to learn and practice of individual and team discipline and responsibility! Being late is not acceptable in any form of successful business! - There are Poster and Paper samples from other students posted on BlackBoard. Remember that these are proprietary and the intellectual property of the student. As always in business, it is your responsibility to respect others property!</td>
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<td></td>
<td><strong>Formation of Teams: In-Class Assignment</strong></td>
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<td>• Discuss potential project topics (brainstorm)</td>
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<td>• Assign Team Project</td>
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<td>• Assign Individual Article</td>
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<td>• Poster templates</td>
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<td><strong>Individual submission</strong></td>
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<td>A1 in class assignment: Exercise 1, Endnote</td>
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<td>A2 in class assignment: Model and references in Paper structure</td>
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<td>1Poster: Individual Topic article</td>
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<td>3Assignments Individual paper (A1-A3)</td>
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<td>1Final Individual paper (A4)</td>
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1. Poster of Final Individual paper (A4)
   Homework SPSS

**Team Poster book 1,2,4:**

2s: Team TBA: ch1 (Kerlinger & Lee, 2000)
2s: Team TBA: ch5 (Kerlinger & Lee, 2000) p. 99 ff

3s: Team1: ch1 (Mehta, 2011)
3s: Team2: ch1 (Zenios, 2011)

4s: Team3: ch2- (Mehta, 2011)
4s: Team4: ch2.1-2.3 (Zenios, 2011)

5s: Team5: ch3 (Mehta, 2011)
5s: Team6: ch2.4-2.5 (Zenios, 2011)

6s: Individual Topic / Poster presentation

7s: Team1: ch4 (Mehta, 2011)
7s: Team2: ch3 (Zenios, 2011)

8s: Team3: ch5 (Mehta, 2011)
8s: Team4: ch4.1 (Zenios, 2011)

9s: Team5: ch6 (Mehta, 2011))
9s: Team6: ch4.2-4.3 (Zenios, 2011)

10s: Team1: ch7 (Mehta, 2011)
10s: Team2: ch4.4-4.6 (Zenios, 2011)

11s: Team3: ch5.1-5.3 (Zenios, 2011)
11s: Team4: ch5.4-5.6 (Zenios, 2011)

12s: Team5: ch5.7-5.9 (Zenios, 2011)
12s: Team6: ch6.1-6.4 (Zenios, 2011)

13s: Individual Paper/Poster presentation
14s: Individual Paper/Poster presentation

**Team Project:**

**Team 1:** TBA
**Team 2:** TBA

**Homework:**

H1: Percy Julian – The Nature of Biotechnology
H2: TBD
H3: TBD
H4: TBD
H5: TBD
H6: TBD
<table>
<thead>
<tr>
<th>Session #2</th>
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| A1: in class | Introduction: Foundations of Biotech Sciences and Management; Scientific Method  
2s: Team TBA: ch1 (Kerlinger & Lee, 2000)  
2s: Team TBA: ch5 (Kerlinger & Lee, 2000) p. 99 ff  
**A1 in class assignment:** Exercise 1, Endnote  
All students must submit assignment during the session.  
submit the word file and Endnote file (.enl) and 5 pdfs of factors and 1 goal  
Homework1: Fill out questionnaire and write 1 page on assigned question. |

<table>
<thead>
<tr>
<th>Session #3</th>
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| T1: Book1  
T2: Book2 | The Health Care Industry, Strategic Focus  
**Team Textbook-Presentation/Discussion:**  
Assigned Teams create and present two or more Posters for each chapter (20min).  
**A2 in class assignment:** Model and references in Paper structure  
All students must submit assignment during the session.  
Submit Written Individual Homework1:  
- optional  
**Assignment1: Use Endnote and 10 references**  
Type 10 references into Endnote  
1. **Exercise:** Find and save Article from “Science Direct” database  
- Go to UB website [https://www.bridgeport.edu](https://www.bridgeport.edu)  
- Select: “Click here to sign in!”  
- Sign in: using your login information  
- Click: “List of Online Databases”  
- Scroll down until you see: “ScienceDirect”  
- Click: “ScienceDirect”  
- Click: “Advanced Search” and type/select:  
1. **Type in:** Term(s): “Induction of pluripotent stem cells” and  
**Change:** “All Fields” to “Title” and  
2 **Type in:** within: “Takahashi” and  
**Change:** “All Fields” to “Authors”  
- Click: “[PDF (1266 K)]” of 2. reference  
- Save pdf as “Takahashi06 pluripotent stem cells and Close window  
- Select 2. and Click: “Export Citations”  
- Click: “Export Citations”  
- Click: “Export”  
- Enter Endnote library name or open existing Endnote library (as here)  
- (here: Double-Click: Endnote library)  
- Close Endnote library to save.  
|  |
| Read Book 1:  
- Chapters 1 |  |
| Read Book 2:  
- Chapters 1 |  |
2. Exercise: Find and save Article from: “Cell” journal


- Sign in: using your login information
- Click: “Looking for a specific electronic journal title/citation”
- (1) Enter: “Cell” and (2) Select: “Exact” and (3) Click “Go”
- Click: “Cell” → new window appears
- Click: “Go” → in new window → new window appears
- **Enter into:** “All Fields: induced pluripotent stem cells” and “Author: Takahashi”
  - Click: “Go”

3. Exercise: Enter article Reference into Endnote

- Open Endnote program
- Select: “New Library” (upper left corner)
- Enter name of your library (e.g. MyLibrary TCMG…)
- Enlarge window
- Select: “References” and “New References” from top tool bar
  - Go back to article of 1. Exercise and Select and copy entire Article Information
  - Paste into Endnote “Title” field
  - Go to article of 1. Exercise and Select and copy entire Article Information
  - Paste into Endnote “Title” field
  - Select: “New Library” (upper left corner)
  - Enter name of your library (e.g. MyLibrary TCMG…)
  - Enlarge window
  - Select: “References” and “New References” from top tool bar
  - Open pdf. of article to get missing information, or go to “scholar.google.com” to get missing information
  - **Exactly** fill in Reference:
    1. Authors: Last Name, First Name, Initials
    2. Year
    3. Title
    4. Journal
    5. Volume
    6. Issue
    7. Pages

Be sure to have no spelling and formatting errors!

- Close reference to save (e.g. x in upper right corner)

3. Exercise: Enter article Reference into Paper

**Change output style to “APA”**

- Open your Endnote library and go to arrow “Current Style” and select “Select Another Style…” from scroll down menu
- Find “APA 5th” and click “Choose”

- Open a word file and have the “Takahashi 2006” reference selected in Endnote
- Click: “Insert Selected Citation(s)”
- Endnote will automatically create the in-text citation: (Kazutoshi Takahashi & Shinya Yamanaka, 2006)
| Session #4 | T3: Book1  
T4: Book2  
H1 | Market research steps; Needs screening  
**Team Textbook-Presentation/Discussion:**  
Assigned Teams create and present two or more Posters for each chapter and answer Selfprep-Test (20min).  
*Each student is prepared to comment and explain on an important issue using the textbook.* |
| --- | --- |
|  | Read Book 1:  
- Chapters 2  
Read Book 2:  
- Chapters 2.1-2.3 |
| Session #5 | T5: Book1  
T6: Book2 | Intellectual property; Market analysis  
**Team Textbook-Presentation/Discussion:**  
Assigned Teams create and present two or more Posters for each chapter and answer Selfprep-Test (20min).  
**Submit Written Individual Homework2:**  
- TBA  
*Each student is prepared to comment and explain on an important issue using the textbook.* |
|  | Read Book 1:  
- Chapters 3  
Read Book 2:  
- Chapters 2.4-2.5 |
| Session #6 |  | **Mid-Term Exam**  
Individual Paper Topic – Poster presentation  
(each student presents poster about the selected biotech topic). |
| Session #7 | T1: Book1  
T2: Book2 | New Product Development; Concept Generation  
**Team Textbook-Presentation/Discussion:**  
Assigned Teams create and present two or more Posters for each chapter and answer Selfprep-Test (20min).  
*Each student is prepared to comment and explain on an important issue using the textbook.* |
|  | Read Book 1:  
- Chapters 4  
Read Book 2:  
- Chapters 3 |
| Session #8 | T3: Book1  
T4: Book2  
A1 | Gateway through the FDA; Intellectual Property  
**Team Textbook-Presentation/Discussion:**  
Assigned Teams create and present two or more Posters for each chapter and answer Selfprep-Test (20min).  
**Submit Written Individual Homework3:**  
- TBD  
**Assignment1: Individual Science Report Topic**  
- Preliminary Topic for Individual Paper  
- Submit hardcopy: Topic and 5 academic References (1/2page)  
*Each student is prepared to comment and explain on an important issue using the textbook.* |
|  | Read Book 1:  
- Chapters 5  
Read Book 2:  
- Chapters 4.1 |
| Session #9  | Manufacturing: Regulatory Basics | Read Book 1:  
- Chapters 6  
Read Book 2:  
- Chapters 4.2-4.3 |
|-----------|---------------------------------|-------------------------------------------------|
| Oct28,13  | **Team Textbook-Presentation/Discussion:**  
Assigned Teams create and present two or more Posters for each chapter and answer Selfprep-Test (20min).  
*Each student is prepared to comment and explain on an important issue using the textbook.* | |
| T5: Book1 | T6: Book2                       |                                                 |

| Session #10 | Reimbursement and product liability: Business Models | Read Book 1:  
- Chapters 7  
Read Book 2:  
- Chapters 4.4-4.6 |
|-------------|-----------------------------------------------------|-------------------------------------------------|
|             | **Team Textbook-Presentation/Discussion:**  
Assigned Teams create and present two or more Posters for each chapter and answer Selfprep-Test (20min).  
**Submit Written Individual Homework4:**  
- TBD  
*Each student is prepared to comment and explain on an important issue using the textbook.* | |
| T1: Book1   | T2: Book2                                           |                                                 |

| Session #11 | Development Strategy and Planning | Read Book 2:  
- Chapters 5.1-5.3  
Read Book 2:  
- Chapters 5.4-5.6 |
|-------------|----------------------------------|-------------------------------------------------|
|             | **Team Textbook-Presentation/Discussion:**  
Assigned Teams create and present two or more Posters for each chapter and answer Selfprep-Test (20min).  
**Submit:** Individual Paper  
Last check on format. Grading 1-5.  
*Each student is prepared to comment and explain on an important issue using the textbook.* | |
|             | **Individual Academic Report**     |                                                 |

| Session #12 | Biotechnology Industry and Firm Structure | Read Book 2:  
- Chapters 5.1-5.3  
Read Book 2:  
- Chapters 5.4-5.6 |
|-------------|------------------------------------------|-------------------------------------------------|
|             | **Team Project and Individual Science Paper:** Review and discussion  
**Submit Written Individual Homework5:**  
write 1-2 page essay of article (Xue, Weng, Zhang, & Tong, 2007)  
- formulate and answer two (2) questions and present in class  
- include 2 references  
*Each student is prepared to comment and explain on an important issue using the textbook.* | |
|             | **T1:** Book2  
**T2:** Book4 |                                                 |

<table>
<thead>
<tr>
<th>Session #13</th>
<th><strong>Due:</strong> Individual Science Report Presentation (Team 1-3)</th>
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|             | **T2:** Book2  
**T1:** Book4 |                                                 |

| Session #14 | **Due:** Individual Science Report Presentation (Team 3-6)  
**Submit:** electronic copy of PowerPoint  
**Submit:** electronic copy of Team Project Paper  
or  
**Video:** DNA: Secret of Photo 51 or Guest Lecture |  |
|-------------|-----------------------------------------------------------|------------------------------------------------|
|             | **T2:** Book2  
**T1:** Book4 |                                                 |
<table>
<thead>
<tr>
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<td>Friday 06. December 2013</td>
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<td><strong>Sessions #15</strong></td>
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