



SC³BP Newsletter

Spring 2007 (April/May/June)

Volume 3, Number 4

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Featured Local Biotech:

- Shin Nippon Biomedical Laboratories (SNBL)
(www.snblusa.com/)
- Spaltudaq
(www.spaltudaq.com/)

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Web Site:

www.seattlecentral.edu/learn/biotech

If you are on this mailing list and no longer wish to receive the SC³BP Newsletter, please contact the Program Coordinator

Previous Newsletters:

Archived on the Biotech

Website:

www.seattlecentral.edu/learn/biotech/newsletter.htm

Hello!

This issue completes Volume 3 of the SC³BP Newsletter. A busy school year completed, and now a group of new students looking forward to starting this fall. The group of graduating students are finding a great degree of success as they enter the job market with many of our students already employed!

As most of you know, Mark will be the coordinator next year, and I have been hired as a tenure-track Biology/Biotechnology instructor. With some hard work on my part to be awarded tenure Mark and I should be the SCCC biotech instructors for many years to come.

Program Update

Certificate options:

We have made some progress toward offering certificate options that fall short of the A.A.S. degree currently offered. The plan is that they will be retroactive, so some of you may be finding a surprise in the mail. The plans below have been okayed by Mark and myself and are awaiting administrative approval, which we hope will be granted early this summer.

Biotechnology Techniques Certificate

BIO 195	Biotechnology Seminar I	1 credit
BIO 196	Biotechnology Seminar II	1 credit
BIO 282	Media & Solution Preparation	2 credits
BIO 285	Biotechnology Lab I,	6 credits
BIO 286	Biotechnology Lab II	6 credits
BIO 287	Biotechnology Lab III	6 credits
Total		22 credits

Below are three "step-oriented" certificate options that fall short of the more comprehensive certificate above:

Media & Reagent Preparation/Microbial Manipulation Certificate

BIO 195	Biotechnology Seminar I	1 credit
BIO 282	Media & Solutions Preparation	2 credits
BIO 285	Biotechnology Lab I	6 credits
BIO 290	Genetics	5 credits
Total		14 credits

Recombinant DNA and Protein Purification Certification

CHEM 211	Quantitative Analysis	5 credits
CSC 180	Scientific Computing & Bioinformatics	3 credits
BIO 286	Biotechnology Lab II	6 credits
Total		14 credits

Cell culture and Immunological Techniques Certification

BIO 196	Biotechnology Seminar II	1 credit
BIO 287	Biotechnology Lab III	6 credits
BIO 295	Immunology	5 credits
Total		12 credits

New Web Site:

Mark's research has indicated that our website is the first way that the vast majority of students learn of our program. As such it is time that it was updated. Web design is not my strong point, but thankfully we have many resources on campus that have helped me put together a good-looking modern webpage. The new website was launched today. I'm sure there are some bugs that I will be working on, but it seems to be functional for the time being.

Take a look in a week or so: www.seattlecentral.edu/learn/biotech

New Biotech Program Logo:

While designing the new website, it was suggested that I design a logo. After several hours designing worthless logos, Mark Ainsworth notified me that one was designed years ago by alumnus Brian Bartley. We did not have the file, but with inspiration from his great idea, I was finally able to successfully design our new logo:



Thank you, Brian!

Annual Meeting Summary

This year's meeting was held on May 7th from 2:00 to 3:30PM.

- **Rationale: the annual meeting serves several purposes:**
 - *Membership:* remind students that they are part of a group, and allow them to meet and network with other members of that group
 - *Check-in:* with the complex lives we all live, many students' interest in the biotech program comes and goes. This meeting is the one time of year that everyone still interested in the program is required to contact me (either come to the meeting or e-mail before hand). This allows the program's

wait-list to be updated, and contact information to be kept current

- *Announcements*: though the Newsletter is one venue to keep students updated on program changes, sometimes hearing about them in person is more memorable. In addition, the meeting provides an opportunity for feedback from the students.
- *Alumi and Current Student Q&A*: All our current students and several alumni attended and were able to share their experience. This was perhaps the most useful part of the meeting. I like to pass on many thanks from next year's class and my own thanks to the alumni in attendance for taking time out of their busy schedules and sharing their stories!
- **Program Updates:**
 - *Wait List*: The wait-list has seen considerable attrition and rearrangement this past year. Many people will move up and e-mail will be the means by which you will be informed of your wait list position.
 - *Primer*: The second iteration of the Primer for the Core Laboratory Series will be sent out at the end of this Spring quarter or early in the Summer.
 - *Scholarships*: Every year there are a number of scholarships, some specific for biotech, that can provide monetary aid to students. Included are the ZymoGenetics scholarship (specific to our program) and the SCCFT scholarship, which has a particularly late deadline of May 31st.

Staying Current

Current student, Brian McDonald brought this to my attention. Recent work that converted skin cells into stem cells holds real promise for scientists and companies that have been restricted by current policy regarding the use of embryonic stem cells in research.

- The New York Times discusses the implications of the research [here](#)

On the business side of things, Amgen recently purchased Ilypsa Inc. Here are a couple interesting opinions on what this signifies.

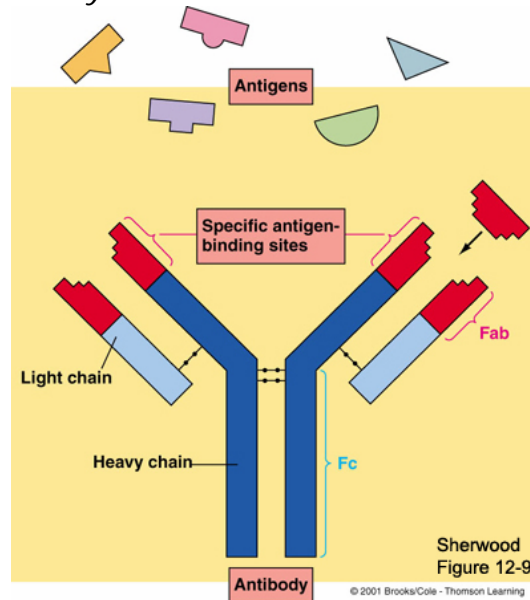
- Morningstar reports that Wall Street sees as a big plus - [read more](#)
- The Los Angeles Times sees it as a trend in response to troubles experienced by many of Amgen's therapeutics that are in development - [read more](#)

Review Questions

Answers from the last issue:

- Draw the structure of an antibody. Label it with the important structural features. Two important parts of antibodies bind with other molecules. What are these and what in general do they bind?

- The image below indicates most of the important structural features of antibodies. There are four polypeptides that make up the structure, two heavy chains and two light chains held together in part by disulfide bonds. The red region is the variable region that differs among antibodies specific to different antigens. The blue region is the conserved region that is shared among all antibodies of a given class (IgM, IgG, IgA, IgD, or IgE). As for the binding affinity of antibodies, the variable Fab region binds to antigen. Remember the epitope is the specific region on the antigen that is bound by antibody. Fab stands for fragment, antigen binding. The Fc region interacts with cell receptors, other antibodies, or proteins of the complement system. Fc stands for fragment, crystallizable.



- What does ELISA stand for? Describe how ELISA works (there are several variations).
 - ELISA stands for Enzyme-linked immunosorbent assay. This can be used to identify antigen or antibody in a particular sample. ELISA is an important technique from medicine to agriculture.
 - As mentioned there are several variations of ELISA. This answer will cover general, or indirect ELISA. This is the method that is used for the HIV test. ELISA commonly employs 96 well microtiter plates with a specific antigen or antibody coated on the bottom of each well. In the HIV test it is antigens from the virus that are present in the wells. A diluted blood sample is added to one or more of the wells. If the individual has been infected with HIV specific antibodies will bind to the HIV antigen. Following a series of wash steps a secondary antibody is added that recognizes and binds Human IgG. The secondary antibody is conjugated to a reporter enzyme such as alkaline phosphatase. This can be detected (again following a series of wash steps) by adding a substrate which will be converted to colored product in the presence of enzyme. The development of color in the well detects individuals who MAY have been infected with HIV. Be careful of false positives!!!

- *Look up direct or sandwich ELISA to see another variation of the same basic principle.*

This issues review questions:

For the "germaphobes"

- List as many methods as you can to control microbial growth on a lab bench, in solutions as well as on or in a human subject.
- Other than physical barriers list as many nonspecific host defense mechanisms (nonspecific immunity) as you can recall.

End of the Year

This is the end of the fourth Volume of the SC³BP Newsletter. I hope that I have maintained the quality established by Mark Ainsworth. I have enjoyed writing each issue, and once again I will reiterate that you all have an open invitation to submit ideas for things you would like to see in the newsletter, feedback, or even something you have written - tips on surviving certain classes, jobs, internship experiences, etc. Enjoy the Summer!!!