

# BIBC100 Structural Biochemistry – Winter 2011

**BIBC 100                      STRUCTURAL BIOCHEMISTRY                      WINTER 2011**

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**LECTURE:**                      Tuesday and Thursday 12:30 pm – 1:50 pm  
Warren Lecture Hall (WLH) 2001

**INSTRUCTORS:**                      M. Montal                      (x40931)  
Office Hours:                      Thursday 2:00 pm – 2:50 pm  
3502 Pacific Hall

**Project Assistant:**                      Kathleen McPherson  
Pacific Hall 3100e  
(x43568)

<b>LECTURE</b>	<b>DATE</b>		<b>TOPIC</b>	<b>Branden &amp; Tooze REFERENCE Chapter</b>	<b>Lehninger 5<sup>th</sup> Edition Reference Chapter*</b>
			<u>STRUCTURAL PRINCIPLES</u>		
1	<b>JAN.</b> 4	Tue	Basics	1	1 & 2
2	6	Thu	Motifs	2	3
3	11	Tue	$\alpha$ domains	3	3 & 4
4	13	Thu	$\alpha/\beta$ and $\beta$ structures	4, 5	3 & 4
5	18	Tue	DNA structure	7	1 & 8
6	20	Thu	Folding	6	4
7	25	Tue	Folding and Flexibility	6	4
8	27	Thu	RECOGNITION: Protein-DNA	8, 10	28
9	<b>FEB</b> 1	Tue	RECOGNITION: Immune System	15	5
	<b>3</b>	<b>Thu</b>	<b><u>MID-TERM IN CLASS</u></b>		
11	8	Tue	CATALYSIS: Proteases	11	6
12	10	Thu	TRANSDUCTION: Membranes	12	10 & 11
13	15	Tue	Membrane Proteins - I	12	10 & 11
14	17	Thu	Membrane Proteins - II	12	10 & 11
15	22	Tue	Channels	12	10 & 11
16	24	Thu	Receptors	13	12
17	<b>MAR</b> 1	Tue	Receptors	13	12
18	3	Thu	Protein Design	17	4
19	8	Tue	X-Ray and NMR	18	4
20	<b>10</b>	<b>Thu</b>	<b>REVIEW</b>		

**FINAL EXAM TUESDAY, MARCH 15 11:30 am-2:29 pm**

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**Textbook (required):**      **Introduction to Protein Structure.** C. Branden and J. Tooze, 2<sup>nd</sup> Edition. Garland Publishing Co., NY 1999.

**Strongly Recommended - Kinemage Supplement to Branden and Tooze**  
J.S. Richardson and D.C. Richardson  
Garland Publishing Co., NY

\*Optional Textbook:      Lehninger Principles of Biochemistry 5<sup>th</sup> Edition  
D. Nelson & M. Cox  
W.H. Freeman & Co. 2008

If you already have Lehninger's 5<sup>th</sup> Edition you will find the material covered in class on the corresponding Chapters indicated on page 1.

Class Websites:            <http://www.biology.ucsd.edu/classes/bibc100.WI11/>

Required Websites:      <http://www.rcsb.org>

Course Requirements:		<b><u>GRADE</u></b>
Midterm:	Thursday, February 3, during class	40%
Final:	March 15, 11:30 am-2:29 pm	60%

**Note: Check your midterm and final exam schedules NOW. There are no alternate exams offered for this class regardless of whether you have other exam(s) on one day. Please plan ahead.**

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You are only responsible for the material covered in class, not for all the material in each chapter. Figures from other sources will be included in the lectures. Many of these figures will appear in the class powerpoints which will be available on the class website. This class will not be podcast.

## BIBC100 Structural Biochemistry – Winter 2011

### Graduate and Undergraduate Student Teaching Assistants

#### Graduate:

FRIEDMAN, AARON	bms	<a href="mailto:a1friedm@ucsd.edu">a1friedm@ucsd.edu</a>	513-315-1724
Tabikh, Sara	ms	<a href="mailto:stabikh@ucsd.edu">stabikh@ucsd.edu</a>	760-805-9767
Sato, Yuichiro	ms	<a href="mailto:y3sato@ucsd.edu">y3sato@ucsd.edu</a>	408-460-6779

#### Undergraduate:

TO BE UPDATED WITH NEW TAS

## **BIBC100 Structural Biochemistry – Winter 2011**

### **BIBC 100: STRUCTURAL BIOCHEMISTRY**

**GRADING INFORMATION:** Plus and minus grading will not be used

**MIDTERM:** Grade Revisions:  
Submit request to TA no later than February 10, 2011  
No grade changes after February 17, 2011  
NO EXCEPTIONS

**FINAL:** Grade Revisions:  
Submit request to Professor or TA no later than  
March 21, 2011  
No grade changes after March 28, 2011  
NO EXCEPTIONS

### **POLICY ON REGRADES:**

Regrades: If a student considers that his/her exam was not properly graded, they may turn in the unaltered, complete exam for a regrade to the TAs no later than 1 week after the exams become available for pick-up. Students must write up on a separate sheet attached to the exam which questions they consider require regrading and sign the bottom of this sheet.

**Students are responsible for understanding that, by requesting a regrade, the entire exam in addition to the indicated questions will be re-evaluated, and points may be added or taken away as a result.**

## **BIBC100 Structural Biochemistry – Winter 2011**

### **BIBC 100: Structural Biochemistry**

#### **Guidelines for Class Etiquette During Examination**

1. All writing instruments must contain non-erasable ink. If students choose not to write in pen, they forfeit the opportunity for a future regrade.
2. All books and handbags should be placed at the front or back section of the auditorium for the duration of the exam.
3. Students should sit in alternating seats whenever possible.
4. When time is called, anyone who is still writing will automatically receive a zero for that page. **THIS WILL BE STRICTLY ENFORCED.** Remain in your seat and hand your exam down the aisle.

UCSD Policy on Integrity of Scholarship (UCSD catalog 10-11, pages 13-17) and Rules of academic dishonesty will be strictly enforced.

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### Protein Data bank

The Research Collaboratory for Structural Bioinformatics Protein Data Bank (PDB) <<http://www.rcsb.org/>> is the single international source for 3D structure files. A four character **PDB ID** is the identifier for the structure of a given **Protein**. Using the identifier and the molecular viewer Jmol you can see and study the 3D structure of these proteins (and many, many more). **Enjoy and imagine!**

Protein	PDB ID
Hemoglobin	1A3N
GroEL/GroES complex	1AON
Chymotrypsin	6GCH
Myoglobin	1MBO
Myoglobin	2MBW
$\alpha$ -hemolysin	7AHL
Immunoglobulin G 2A intact	1IGT
Immunoglobulin G 2A fab fragment	1GGC
Immunoglobulin G 2A fab fragment (50.1) complex with 16-residue peptide	1GGI
Lysozyme	1LZE
Bacteriorhodopsin	2AT9
Aquaporin	2B6O
Maltoporin	1AF6
Maltoporin	1MAL
Lactose permease (lactose transporter)	1PV7
Aquaporin 1, AQP-1	1J4N
K <sup>+</sup> channel protein	1BL8

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Voltage-gated K <sup>+</sup> channel	1J95
Voltage-gated K <sup>+</sup> channel	2A79
Ras protein	5P21
Protein kinase A; R <sub>2</sub> C <sub>2</sub> complex	1U7E
Green fluorescent protein (GFP)	1GFL
Calmodulin	1CLL
SHC (SH2 domain)	1SHC
Bacteriorhodopsin (rhodopsin and G protein transducin)	1BAC
Protein kinase (active site)	1S9I
Cytochrome c oxidase	1OCC
Bovine mitochondrial F <sub>1</sub> -ATP Synthase	1BMF
ATP synthase $\gamma$ chain (F <sub>0</sub> F <sub>1</sub> )	1QO1
Photosynthetic reaction center	1PRC
Light harvesting complex II	2BHW
Bacteriorhodopsin	1C8R
Photosystem II	2AXT
Cytolytic $\alpha$ -helical toxin- cytolysin	2WCD
SecA-SecYEG Protein translocation channel	3DIN
GPCR- $\beta$ -adrenergic receptor	2RH1