The Student Learning Service and the PeerWise Self Directed Learning Assignment

Dr Lesley Nicolson

Biomolecular Sciences

and

Dr Amanda Sykes

Student Learning Service
This is your assignment…

You have to **write** and **answer** and **comment on** multiple choice questions on topics relating to biomolecular science.

There are deadlines

There are penalties

There might even be prizes too !!!
Have you ever…

...answered MCQ questions…?

...written MCQs?
Eight questions, and you should be able to get them all right… just think about how MCQs are written

Nora Mogey, Phil Race and Roger Lewis

1. The usual function of a Grunge-prowker is to remove:
   A: Grungs
   B: Snarts
   C: Trigs
   D: Grods

Nora Mogey, Phil Race and Roger Lewis
Antigrottification occurs...

A: on summer mornings
B: on summer evenings provided there is no rain before dusk
C: on autumn afternoons
D: on winter nights
Lurkies suffer from trangitis because...

A: their prads are always underdeveloped
B: all their brizes are horizontal
C: their curnpieces are usually imperfect
D: none of their dringoes can ever adapt

Nora Mogey, Phil Race and Roger Lewis
Non-responsive frattling is usually found in an:

A: Gringle
B: Janket
C: Kloppie
D: Ukerpod

Nora Mogey, Phil Race and Roger Lewis
Which are exceptions to the law of lompicality?

A: The miltrip and the nattercup
B: The bifid pantrip
C: The common queeter
D: The flanged ozzer
Which must be present for parbling to take place?

A: Phlot and runge
B: Runge
C: Stuke and runge
D: Runge and trake
One common disorder of an overspragged ukerpod is:

A: Copious vezzling
B: Intermittent weggerment
C: Non-responsive frattling
D: Uneven yurkation
Which is the correct answer?

A
B
C
D

Nora Mogey, Phil Race and Roger Lewis
How do you think you got on?

Swap with your neighbour…
The usual function of a grunge-prowker is to remove:

A: Grunges
B: Snarts
C: Trigs
D: Grods

Nora Mogey, Phil Race and Roger Lewis
Antigrottification occurs…

A: on summer mornings

B: on summer evenings provided there is no rain before dusk

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Nora Mogey, Phil Race and Roger Lewis
Lurkies suffer from trangitis because...

A: their prads are always underdeveloped
B: all their brizes are horizontal
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D: none of their dringoes can ever adapt
Non-responsive frattling is usually found in an:

A: Gringle
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Nora Mogey, Phil Race and Roger Lewis
Which are exceptions to the law of lompicality?

A: The miltrip and the nattercup
B: The bifid pantrip
C: The common queeter
D: The flanged ozzer

Nora Mogey, Phil Race and Roger Lewis
Question six:

Which must be present for parbling to take place?

A: Phlot and runge
B: Runge
C: Stuke and runge
D: Runge and trake

Nora Mogey, Phil Race and Roger Lewis
One common disorder of an overspragged ukerpod is:

A: Copious vezzling
B: Intermittent weggerment
C: Non-responsive frattling
D: Uneven yurkation

4. Non-responsive frattling is usually found in an:
   A: Gringle
   B: Janket
   C: Kloppie
   D: Ukerpod
Which is the correct answer?

A
B
C
D

(ABCDABCD)

Nora Mogey, Phil Race and Roger Lewis
What to learn from the answers…

Don’t give a clue in the stem (an, plural)
Don’t give the answer in another question
Don’t mix definite responses and qualifications
Do make all distractors approx same length
Do use A and E
Don’t use a distractor that is 100% implausible
Do be sure the correct answer is unique
So, the quiz gives you some ideas for rules to think about when writing multiple choice questions.

But, what would a biomolecular science question look like…?
Which amino acid is formed by modification after its parent amino acid has been incorporated into a peptide linkage?

   a) threonine  
   b) arginine  
   c) histidine  
   d) proline  
   e) hydroxyproline

This is a poor question.  
You could guess hydroxyproline as it is the only answer where the amino acid name is modified.
In serum protein electrophoresis at pH 7, albumin moves to the anode and immunoglobulin moves to the cathode. Which of the following correctly explains this phenomenon?

a) Immunoglobulin has more hydrophobic amino acids than albumin
b) Albumin has more hydrophobic amino acids than immunoglobulin
c) Albumin is a larger protein than immunoglobulin
d) Albumin has more basic amino acids than acidic amino acids
e) Immunoglobulin has more basic amino acids than acidic amino acids

This question requires you know the feature of proteins that fractionates them during electrophoresis (charge) AND what type of charge would propel a protein to the cathode.

You are required to deduce the answer based on the information provided in the stem and your knowledge of electrophoresis.
What is the reverse complement of DNA sequence 5’-ATTGGCTCT -3’?

- a) 5’-CTCTAACCT -3’
- b) 5’-GCCAATCTC-3’
- c) 5’-TCTCGGTTA- 3’
- d) 5’-AGAGCCAAT -3’
- e) 5’-TAACCGAGA- 3’

This question is good. Concepts covered: 1) base pairing is A:T and G:C  

2) DNA double strand is antiparallel so 5’-3’ top strand, 3’-5’ bottom strand

3) reverse complement means opposite strand sequence AND the distractors deal with common misconceptions

- d) is the correct answer:  
  the sequence that would base pair with stem sequence  
  5’-ATTGGCTCT -3’
  3’-TAACCGAGA-5’ so the answer is: 5’-AGACCAAT-3’

- a) and b) Misconception – A:G pairs and C:T pairs (sequence is ‘reverse complement’/’reverse’)  
- c) Reverse of stem sequence – not complementary  
- e) Each base is complement of base in stem sequence BUT would not base pair with it as direction is 5’-3’ (not 3’-5’)
Bad Questions...
...are too simplistic
...don’t explore complex subjects
...don’t anticipate topics/nuances others find tough

Bad Distractors...
...signal what the answer is (think quiz)
...are too different
...aren’t plausible enough
...cannot be explained
Why are good questions, distracters & explanations important?

For you as author:
- Check your understanding
- Highlight confusions
- Increases your learning

For someone else as student:
- Check their understanding
- Explain their confusions
- Increases their learning
It’s anonymous (you need to create a username)

You write MCQs based on the course ILOs and write explanations for the answer and why the distracters are incorrect and tag them (why?)

Your peers answer them and comment on them and rate them for difficulty (easy-hard) and quality (0 to 5) and ‘follow’ you (why?) and tag your question (why?)
Welcome to PeerWise

PeerWise supports you and your peers in the creation, sharing, evaluation and discussion of assessment questions relevant to your studies.

You design the questions
Creating a question requires you to reflect on what you are learning in a course. Explaining the answer to your question in your own words helps to reinforce your understanding. If you teach it, you understand it.

See what everyone thinks
Attempt questions written by your peers, and see how everyone else has answered. Feedback is immediate, you have access to explanations and you can participate in discussions. See what others think is important.

Learn from your peers
Search by quality, difficulty and topic to find questions of interest to you. Follow authors who contribute questions that you like, and request help when you need it. Help your peers, and let them help you.

PeerWise is simple to use - you can access it anywhere and anytime. New to PeerWise? Find out all you need to know.

http://peerwise.cs.auckland.ac.nz/at/?gla_uk
Your registration number

Also, register your student email account
What does it look like?

Main Menu

- Questions you’ve contributed
- Questions you’ve answered
- Questions you’ve not answered yet
- Questions by authors you’re following

PeerWise

Biomolecular Sciences 1 (2011-12)

Your questions
- You are currently contributing 0 questions
- You have deleted 0 of your questions

Answered questions
- You have answered 0 questions (of these, 0 have been deleted by the author)
- You have written 0 comments about these questions

Unanswered questions
- There are currently 0 unanswered questions you may answer

Followed questions
- There are 0 unanswered questions by authors you are currently following

Your score

Provide the following:
1. Question text (ILO-based)
2. Correct answer (only one!!!)
3. Four plausible distracters
4. Explanations for all answers
5. A tag

A cross of two homozygous lizards produces a pedigree shown in figure 1 in this black scales are:

NB: max size 50k
### Alternatives

<table>
<thead>
<tr>
<th>Option</th>
<th>Alternative</th>
<th>Responses</th>
</tr>
</thead>
</table>
| A      | I. homozygous, phenotype cannot fly  
       | II. heterozygous, phenotype cannot fly                                     | 2 (11.30%)|
| B      | I. heterozygous, phenotype can fly  
       | II. heterozygous, phenotype cannot fly                                     | 1 (0.09%) |
| C      | I. homozygous, phenotype can fly  
       | II. heterozygous, phenotype cannot fly                                     | 1 (0.92%) |
| D      | I. heterozygous, phenotype can fly  
       | II. homozygous, phenotype can fly                                          | 1 (0.02%) |
| E      | I. heterozygous, phenotype can fly  
       | II. heterozygous, phenotype can fly                                         | 26 (96.91%)|

### Explanation

The following explanation has been provided relating to this question:

Heterozygous refers to any genotype consisting of two different alleles. This will hide any recessive traits in the pair.

Homozygous refers to any genotype consisting of two identical alleles. This will allow a pair of recessive traits to be expressed.

The vestigial wing was coded for by a recessive allele, thus required a homozygous genotype i.e. gg for it to be expressed.
Difficulty, rating and commenting on questions

Rating:
Is it good enough for the final exam?
Is the explanation enough that someone who got it wrong would understand why?

Things to remember:
1. An easy question can still be excellent
2. Rate fairly
3. Justify poor ratings with comments
4. Comments must be constructive
5. Usual online etiquette applies
6. It’s anonymous BUT we can track your contributions
<table>
<thead>
<tr>
<th>WHEN</th>
<th>COMMENT (SCORE OF COMMENT AUTHOR)</th>
<th>AGREE WITH COMMENT</th>
<th>DISAGREE WITH COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:37pm, 10 Jan</td>
<td>Good question, made me think twice whether the head or tail was hydrophilic or hydrophobic.</td>
<td>✭✭✭✭✭✭✭✭✭✭✭✭</td>
<td>✭✭✭✭✭✭✭✭✭✭✭✭</td>
</tr>
<tr>
<td>6:24pm, 11 Jan</td>
<td>Good question! I always think of the head being hydrophilic as it enjoys getting its hair washed! L, just a wee memory aid (there :) :)</td>
<td>✭✭✭✭✭✭✭✭✭✭✭✭</td>
<td>✭✭✭✭✭✭✭✭✭✭✭✭</td>
</tr>
<tr>
<td>8:20pm, 10 Jan</td>
<td>C and D don't answer the question, don't seem related to why they form bilayers. Do phospholipids form disulfide bonds? Explanation is good for answers A and E, which were great answers to make you doubt that's good in multiple choice.</td>
<td>✭✭✭✭✭✭✭✭✭✭✭✭</td>
<td>✭✭✭✭✭✭✭✭✭✭✭✭</td>
</tr>
<tr>
<td>5:42pm, 11 Jan</td>
<td>Keeping E as the 'phosphate' head like in A would have made me think even more about hydrophobic and hydrophilic, because I wouldn't have been able to make the link between water being attracted to polar. Good question and explanation!</td>
<td>✭✭✭✭✭✭✭✭✭✭✭✭</td>
<td>✭✭✭✭✭✭✭✭✭✭✭✭</td>
</tr>
<tr>
<td>7:59pm, 10 Jan</td>
<td>Good question, made me doubt which one was hydrophobic and which was hydrophilic.</td>
<td>✭✭✭✭✭✭✭✭✭✭✭✭</td>
<td>✭✭✭✭✭✭✭✭✭✭✭✭</td>
</tr>
<tr>
<td>7:58pm, 10 Jan</td>
<td>Good question, really good test of accurate knowledge.</td>
<td>✭✭✭✭✭✭✭✭✭✭✭✭</td>
<td>✭✭✭✭✭✭✭✭✭✭✭✭</td>
</tr>
<tr>
<td>8:54pm, 10 Jan</td>
<td>Interesting question, agreed that C and D seem most irrelevant</td>
<td>✭✭✭✭✭✭✭✭✭✭✭✭</td>
<td>✭✭✭✭✭✭✭✭✭✭✭✭</td>
</tr>
<tr>
<td>10:20pm, 10 Jan</td>
<td>Good question to make you think about your answer. I liked the way the question made me think about the structure of a phospholipid! Well done!</td>
<td>✭✭✭✭✭✭✭✭✭✭✭✭</td>
<td>✭✭✭✭✭✭✭✭✭✭✭✭</td>
</tr>
<tr>
<td>2:12pm, 11 Jan</td>
<td>Good question with having both suggested hydrophilic &amp; hydrophobic.</td>
<td>✭✭✭✭✭✭✭✭✭✭✭✭</td>
<td>✭✭✭✭✭✭✭✭✭✭✭✭</td>
</tr>
</tbody>
</table>
There are currently questions on the following topics that you may answer (darker topics are more popular):

- "Allosteric Effects" "Amino Acids" "Beta Oxidation" "Biostatistics" "Blood" "Carbohydrates" "Cell Biology" "Cell Cycle" "Cell Death" "Cell Division" "Cell Membranes" "Cell Signalling" "cell signalling" "Cell Structure" "Cellular Organelles" "Cholesterol" "Chromosomes/Disorders" "Chromosomes " "Citrate Shuttle" "Classification" "cytogenetics" "Digestion Diseases" "Disruption Ox Phos" "DNA replication" "DNA RNA" "Endocrine System" "Endocrinology" "enzyme inhibitors" "Enzyme Kinetics" "Enzymes" "Fatty Acid Breakdown" "Fatty Acid Synthesis" "Genetics" "Gluconeogenesis" "Glycogenesis" "Glycolysis and " "Glycolysis and G6Pase" "Hemoglobin" "Heritability" "Hormones" "Karyotypes" "Ketone Bodies" "Lipid bilayer" "Lipids" "Lipids metabolism" "Lipoproteins" "Metabolism" "Mitosis" "Mode of Inheritance" "Muscle Metabolism" "Nitrogen Metabolism" "Nutrition" "Oxidation Phosphorylation" "Peptide Bonds" "Phosphofructokinase" "Phospholipid bilayer" "Plasma" "Primary Structure" "Proteins" "Prophase I" "Protein Separation" "Protein Trafficking" "Proteins" "Proteomics" "Receptors" "Red Blood Cell" "regression" "structural proteins" "TCA cycle" "Telomeres" "Trace Elements" "Transcription Translation" "Translocation" "Transportation" "Urea cycle" "Vitamins" "X.ch mos inuculation" 

Select a topic to see all the questions on that topic only.

Show questions on all topics
Participation improves grade:

Exam performance by quartile, LPA v. MPA
LPA = Least PeerWise Active, MPA = Most PeerWise Active

Things you need to know to register:

**Address:** http://peerwise.cs.auckland.ac.nz/at/?gla_uk

**Course ID:** 5679

**Your identifier:** your registration (matriculation) number
### Term One Assignment Deadlines

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mon 24&lt;sup&gt;th&lt;/sup&gt; Oct 17:00</td>
<td>Submit 1 good quality question (minimum) cell biology / proteins / enzymes / molecular biology</td>
<td></td>
</tr>
<tr>
<td>Mon 31&lt;sup&gt;st&lt;/sup&gt; Oct 17:00</td>
<td>Answer 10 questions (minimum)</td>
<td></td>
</tr>
<tr>
<td>Mon 21&lt;sup&gt;st&lt;/sup&gt; Nov 17:00</td>
<td>Submit 1 good quality question (minimum) Metabolism / biostatistics / genetics</td>
<td></td>
</tr>
<tr>
<td>Fri 2&lt;sup&gt;nd&lt;/sup&gt; Dec 17:00</td>
<td>Answer 10 questions (minimum)</td>
<td></td>
</tr>
</tbody>
</table>

**Minimum requirement:** Author two good quality questions Answer 20 questions
What do you get?

Timely and (hopefully) useful feedback
Deeper understanding (passing exam/better grade)
Kudos (albeit anonymous!!)
Revision
Critical thinking
Deconstructing assessment
The chance to see lots of questions and to see other people’s answers to, and comments on them
Excellent questions *might* be used in assessments (they were last year)
Student feedback (positive)

75% agreed that writing and answering Qs aided their understanding/revision

Great revision and feedback tool
Areas identified by students as ‘issues’:

1. Accuracy of database - YOUR responsibility
   - commenting on Qs by all, and editing of Q by author

2. Relevance of some questions - use ILOs

3. ‘Unconstructive comments’ - provide useful feedback to question author/community & BE NICE

4. Lack of effort by some students - by the class FOR the class so your effort impacts everyone else
Medium strength relationship between number of PW Qs answered and class exam grade. And between number of days active and grade.
Self directed learning assignments:

4 PeerWise deadlines and 2 Aropa deadlines each term

You will receive up to 5% towards your professional mark for Biomolecular Science 1:

2.5% for meeting ALL PW and Aropa deadlines in term 1
2.5% for meeting ALL PW and Aropa deadlines in term 2

If you miss one, or more than one, deadline in term 1 your carryover for term 1 will be 0%.