

**ONLINE REVIEW CHAT: IB BIOLOGY HL SENIORS**  
**October 29, 2009**  
**TOPIC: Genetics and Biotechnology**

8:49:30 PM Brielle: ms chien has entered the room

8:49:43 PM Annie Chien: ok at 9, you have the job of inviting everyone

8:50:29 PM Brielle: ok

8:50:44 PM Brielle: as long as everyone comes

8:53:09 PM Annie Chien: so far this year, you are my favorite student :-P

8:53:18 PM Brielle: yay!!

8:53:27 PM Annie Chien: you actually do the things I tell you without complaining

8:53:31 PM Annie Chien: last year it was stepha

8:53:33 PM Brielle: lol

8:53:44 PM Brielle: i'll try not to complain in class

8:53:45 PM Brielle: :-)

8:54:11 PM Annie Chien: if its stepha and you again im gonna just ask some left over questions and have you guys ask me questions

8:54:20 PM Brielle: ok

8:54:23 PM Brielle: sounds fun

8:58:59 PM Shannon: hi

8:59:35 PM Annie Chien: hi shannon we will start in 5 minutes

8:59:38 PM Annie Chien: just waiting for more people

8:59:38 PM Shannon: k

8:59:45 PM Brielle: yay!!

8:59:49 PM Brielle: more people!!

8:59:55 PM Brielle: SHANNON!!

9:00:01 PM Brielle: welcome

9:00:33 PM Annie Chien: stepha i have \$50 for you

9:00:40 PM Brielle: wow

9:00:44 PM Brielle: where's mine?

9:00:48 PM Shannon: yea

9:00:58 PM Annie Chien: when you get the highest IB grade

9:01:36 PM Stepha: thank you

9:01:37 PM Brielle: on the IB test?

9:01:40 PM Annie Chien: yes

9:01:43 PM Brielle: ok idc then

9:01:45 PM Brielle: lol

9:01:46 PM Stepha: i feel bad accepting money from a teacher

9:01:51 PM Brielle: but nice job steph

9:01:53 PM Stepha: its weird

9:01:55 PM Brielle: lol

9:01:59 PM Annie Chien: its not money, its on a gift card to that store you said

9:02:05 PM Brielle: what store?

9:02:09 PM Stepha: its still weird ms.chien

9:02:15 PM Stepha: Forever 21 brie

9:02:18 PM Annie Chien: yeah

9:02:19 PM Brielle: nice

9:02:26 PM Annie Chien: ok ets start

9:02:28 PM Brielle: i got a cute outfit from there

9:02:31 PM Stepha: lol

9:02:36 PM Stepha: lets start

9:02:38 PM Annie Chien: dont be surprised if some of these questions are repeated from yeseryda

9:02:40 PM Stepha: and beast

9:02:55 PM Annie Chien: What is the role of sticky and blunt ends in biotechnology?

9:03:28 PM Shannon: **sticky ends are the long ends, blunt the short and they are there to allow for rejoining of nucleotides in gentetic modification**

9:04:01 PM Shannon: **right?**

9:04:35 PM Annie Chien: shannon - correct

9:04:37 PM Annie Chien: beast

9:04:44 PM Brielle: *the sticky ends and the blunt ends make up the differences in size*

9:05:02 PM Brielle: *next question*

9:05:27 PM Annie Chien: Describe how scientists are revolutionizing organ replacement using cloning technology (you must describe the process).

9:05:49 PM Stepha: they are revolutionizing it by making it quicker

9:05:58 PM Stepha: and since now we have stem cells to work with

9:05:59 PM Annie Chien: need specifics

9:06:14 PM Stepha: we can make organs out of unspecified cells

9:06:30 PM Annie Chien: ok, what is the significance to that?

9:06:30 PM Shannon: **they take a cell from a host, remove the nucleus and replace it with the one desired. they let it grow and they specifiy it for the organ needed**

9:06:45 PM Annie Chien: shannon good, significance?

9:06:55 PM Brielle: *because undifferentiated cells can be used to make anything, the scientists can use them to develop a specific organ that is made perfectly for the patient*

9:07:04 PM Shannon: **they can grow, quickly organs and no longer need to look for matches in families or donor banks**

9:07:09 PM Annie Chien: SIGNIFICANCE?

9:07:12 PM Annie Chien: shannon - correct

9:07:16 PM Stepha: save more lives

9:07:51 PM Brielle: *no waiting lists and ethical issues invloving which patients deserve the organs*

9:07:57 PM Brielle: *involving\**

9:08:20 PM Annie Chien: stepha, dont say that

9:08:24 PM Annie Chien: shannon is good

9:08:29 PM Brielle: *is mine?*

9:08:31 PM Annie Chien: brielle: still too broad

9:08:32 PM Stepha: okay

9:09:02 PM Annie Chien: brielle: why would there be any ethical issues for patients getting their OWN organs from their own stem cells?

9:09:19 PM Brielle: *well i was gonna say what shannon said but she was quicker*

9:09:23 PM Brielle: *so i added*

9:09:25 PM Annie Chien: yeah yeah

9:09:28 PM Brielle: *no not that*

9:09:32 PM Annie Chien:

Discuss the benefits and drawbacks of using differentiated vs. undifferentiated cells in medical applications.

9:10:15 PM **Stepha**: benefits of using differentiated is that it is already specific to the organ and undifferentiated can be turned into anything

9:10:24 PM **Stepha**: opening possibilities

9:10:39 PM **Stepha**: for the patient to grow their own instead of waiting

9:10:53 PM **Annie Chien**: ok what is a benefit to using a differentiated cell?

9:11:05 PM **Stepha**: but undifferentiated you come into ethical questions

9:11:16 PM **Annie Chien**: stepha good

9:11:29 PM **Annie Chien**: what about the differentiated - why don't you have ethical issues with that

9:12:08 PM **Stepha**: they are cells already specified so it's not like you're changing a desired cell or manipulating the genes for your own purpose ---playing god

9:12:14 PM **Annie Chien**: ok

9:12:25 PM **Annie Chien**: What is the role of PCR technology? How has it revolutionized DNA analysis?

9:12:42 PM **Annie Chien**: did anyone invite Angela?

9:12:48 PM **Brielle**: i tried

9:12:55 PM **Brielle**: it won't work because it's her phone

9:13:02 PM **Annie Chien**: oh ok

9:13:32 PM **Shannon**: **to replicate DNA to have more samples to look at. Allowing for more tests with less DNA needed, like trying to get evidence against a suspect in a crime case**

9:13:51 PM **Shannon**: **against\***

9:14:04 PM **Annie Chien**: good - can you give me another example of when PCR comes in handy, because crime cases

9:14:16 PM **Brielle**: **paternity test?**

9:14:20 PM **Annie Chien**: yes

9:14:22 PM **Annie Chien**: what else

9:14:23 PM **Shannon**: **thats wat i was gonna say**

9:14:26 PM **Stepha**: GMO foods

9:14:29 PM **Brielle**: **ha beat you**

9:14:30 PM **Brielle**: lol

9:14:31 PM **Annie Chien**: yes good what else

9:14:49 PM **Annie Chien**: what about forensic archeology?

9:14:55 PM **Shannon**: **making a gene u plan on entering into a vector to genetically modify food sources**

9:15:04 PM **Annie Chien**: shannon ok

9:15:11 PM **Annie Chien**: what about forensic archeology?

9:15:21 PM **Shannon**: **study cause of death of ancient peoples, bring back the woolly amoth**

9:15:25 PM **Shannon**: **mammoth\***

9:15:43 PM **Annie Chien**: well don't say bringing back, say studying the genome of extinct animals and plants

9:15:49 PM **Shannon**: **ok**

9:16:00 PM **Annie Chien**: good

9:16:03 PM **Brielle**: **not just their death but some of the qualities that they had**

9:16:14 PM **Brielle**: **that could tell us about their culture**

9:16:17 PM **Annie Chien**: Discuss the potential benefits and possible harmful effects of one example of genetic modification.

9:16:30 PM **Brielle**: **BT CORN!!**

9:16:35 PM Shannon: **bt corn toxins in the same way as some mushrooms**

9:16:36 PM Brielle: lets use that

9:16:57 PM Shannon: **possible carcinogens**

9:17:09 PM Annie Chien: mushrooms?

9:17:30 PM Annie Chien: oh ok i see, but you need to explicitly explain that

9:17:46 PM Shannon: **in the presentation they said that bt corn has the same level of toxicity as mushrooms, which is only bad in large quantities**

9:17:51 PM Stepha: okay BT corn is a corn that contains BT which resists pests

9:18:30 PM Annie Chien: ok keep going

9:18:33 PM Stepha: allows the plant to be more efficient by growing it quicker and healthier

9:18:53 PM Brielle: **It is resistant to the pesticides so it doesn't absorb the chemicals**

9:18:55 PM Annie Chien: ok good

9:19:05 PM Annie Chien: brielle what is the con there

9:19:18 PM Brielle: ummm.....

9:19:21 PM Stepha: it can't reproduce?

9:19:33 PM Shannon: **SUPER BUGGS**

9:19:35 PM Brielle: **the pests can evolve**

9:19:46 PM Stepha: forget me

9:19:49 PM Shannon: **da da da da!**

9:19:57 PM Brielle: **they can become tolerant of the pesticides**

9:20:09 PM Annie Chien: ok good

9:20:33 PM Annie Chien: but the BT is already produced by the plants, so saying that the plants won't absorb them doesn't make any sense

9:20:53 PM Annie Chien: Describe a clone.

9:21:12 PM Shannon: **a genetic copy of an organism with the EXACT same genotype**

9:21:16 PM Brielle: oo

9:21:17 PM Brielle: sorry

9:21:25 PM Shannon: **the\***

9:21:29 PM Brielle: **same dna minus introns**

9:21:34 PM Annie Chien: good

9:21:46 PM Stepha: same phenotype too

9:21:46 PM Annie Chien: Describe two examples of using clone technology to benefit animals and plants

9:22:08 PM Brielle: **cloning in plants can produce the ideal traits in food sources**

9:22:19 PM Annie Chien: for example

9:23:05 PM Brielle: **like being healthier for consumption**

9:23:06 PM Shannon: **you clone one healthy plant enough times to make an entire crop of them, so you can feed more people**

9:23:19 PM Annie Chien: good

9:23:23 PM Annie Chien: what's the con to that

9:23:43 PM Shannon: **cross breeding could lead to unfavourable mutations**

9:23:53 PM Annie Chien: cross breeding with.....

9:24:02 PM Brielle: **pollen from other plants**

9:24:06 PM Annie Chien: gotta be specific and offer specific examples!

9:24:17 PM Stepha: like BT rice

9:24:22 PM Shannon: **its offspring**

9:24:23 PM Stepha: i mean golden rice

9:24:26 PM Brielle: because the insects could carry pollen from different plant to that plant

9:24:41 PM Brielle: and the offspring could be altered

9:24:53 PM Annie Chien: so it would mate with a non-recombinant plant you mean

9:24:57 PM Brielle: yes

9:24:58 PM Annie Chien: one that is not genetically altered.

9:25:07 PM Brielle: yes

9:25:11 PM Annie Chien: say that!

9:25:20 PM Brielle: well i didnt know how to word it

9:25:28 PM Annie Chien: Outline a technique for cloning using differentiated animal cells.

9:25:28 PM Brielle: srry i'll remember that now

9:25:47 PM Annie Chien: remember it

9:25:54 PM Brielle: hey this is the zona pellucida thing!!

9:26:04 PM Brielle: h.o. i'm thinking

9:26:12 PM Annie Chien: you dont remember anything else, but you remember zona pellucida

9:26:17 PM Brielle: lol

9:26:23 PM Shannon: **rmove the nucleus of the surrogate mothers sex cell and replace it with the nucleus of any diploid cell of the organism to be cloned**

9:26:26 PM Brielle: if anyone else knows be my guesy

9:26:30 PM Brielle: guest\*

9:26:34 PM Annie Chien: Shannon good

9:26:40 PM Annie Chien: what is another method

9:26:44 PM Annie Chien: HINT\* twins

9:26:58 PM Brielle: why did it seems so much more complicated yesterday?

9:27:16 PM Annie Chien: because i make it that way

9:27:20 PM Brielle: lol

9:27:22 PM Brielle: ok

9:27:57 PM Shannon: **let a cell divide, remove the zona pellucida, let divide insert generated zp and let go on like in nature**

9:28:06 PM Annie Chien: shannon excellent!

9:28:24 PM Brielle: nice

9:28:35 PM Brielle: srry i was doing something else

9:28:41 PM Annie Chien:

How does gel electrophoresis work?

9:28:55 PM Stepha: an electric current is passed through a gel

9:28:57 PM Annie Chien: why does everyone remember nothing but the zona pellucida

9:29:03 PM Brielle: i remember

9:29:17 PM Brielle: the dna is separated by size

9:29:18 PM Stepha: going from negative to positive

9:29:29 PM Brielle: dna is negatively charged

9:29:34 PM Annie Chien: ok good so

9:29:37 PM Annie Chien: explain it

9:29:53 PM Stepha: the dna gets seperated by size moving through the gel with electrical pulses

9:30:00 PM Brielle: and the heavier ones move more slowly and the smaller moves faster

9:30:01 PM Annie Chien: electrical FIELD

9:30:08 PM Annie Chien: brielle - so what?

9:30:13 PM Annie Chien: how does that affect the gel?

9:30:16 PM **Stepha**: smaller pieces move faster "fatter" ones get left behind --- swimmers

9:30:23 PM **Stepha**: shows the size of the dna

9:30:28 PM **Annie Chien**: ok dont say that on the test but yes

9:30:31 PM **Brielle**: lol

9:30:41 PM **Annie Chien**: what is the role of markers on a gel?

9:31:00 PM **Shannon**: **to give a comparison like a control in an experiment**

9:31:13 PM **Annie Chien**: shannon good but what IS it?

9:31:40 PM **Annie Chien**: hello?

9:31:40 PM **Shannon**: **so you know what allele you are looking at and know if it the same in other pieces of DNA**

9:31:47 PM **Brielle**: *they can be used to match family members or samples in crimes*

9:31:47 PM **Shannon**: **allele**

9:31:52 PM **Annie Chien**: what IS a marker????

9:32:08 PM **Stepha**: a marker is a line on the paper

9:32:15 PM **Stepha**: lol

9:32:22 PM **Brielle**: *something that comes in many colors and is used to draw pictures*

9:32:23 PM **Brielle**: lol

9:32:24 PM **Brielle**: jk

9:32:28 PM **Stepha**: a band thing

9:32:37 PM **Annie Chien**: marker = known sizes of DNA in a gel that acts as a ruler for DNA analysis

9:32:45 PM **Shannon**: **a band of test DNA that hasn't been seperated?**

9:32:59 PM **Annie Chien**: marker? shannon no

9:33:17 PM **Annie Chien**: marker = known sizes of DNA in a gel that acts as a ruler for DNA analysis

9:33:30 PM **Brielle**: *i was gonna say that but differently*

9:33:36 PM **Brielle**: *i'm a slow typer*

9:33:37 PM **Brielle**: lol

9:34:01 PM **Annie Chien**:

Explain roles of the different ingredients used in PCR.

9:34:22 PM **Brielle**: *dna polymerase reads the dna*

9:34:37 PM **Annie Chien**: for what reason

9:34:41 PM **Shannon**: **polymerase reads the strands, nucleotides rebuild teh dna, primers point out the starting point and ligase puts it back together**

9:35:04 PM **Stepha**: agree with shannon

9:35:05 PM **Shannon**: **and ligase puts the new strands together\***

9:35:14 PM **Annie Chien**: shannon GOOOOOOOOOOOOOOOOOOOO

9:35:21 PM **Annie Chien**: it feels good to have another stepha

9:35:26 PM **Stepha**: wow

9:35:27 PM **Annie Chien**: finally, someone beating stepha

9:35:39 PM **Shannon**: **it feels ggod to be confident about the test**

9:35:39 PM **Stepha**: *i cant type fast and im doing history*

9:35:40 PM **Annie Chien**: :-D

9:35:41 PM **Brielle**: *i didnt even get to answer your other question*

9:35:45 PM **Brielle**: *i got cut of*

9:35:49 PM **Stepha**: lol

9:35:51 PM **Brielle**: *off\**

9:35:53 PM **Shannon**: **sorry**

9:35:54 PM **Annie Chien**: excuses excuses

9:36:02 PM Brielle: you said for what reason?

9:36:14 PM Stepha: just get it shannon --- your a beast and this is your first review

9:36:17 PM Stepha: you own me

9:36:19 PM Stepha: lol

9:36:21 PM Annie Chien: lol

9:36:23 PM Brielle: i was gonna explain but shannon answered and you said "GOOOOOOOD"

9:36:29 PM Brielle: but whatevz

9:36:30 PM Annie Chien: type faster

9:36:32 PM Brielle: next

9:36:34 PM Shannon: **wat can i say i type fast**

9:36:43 PM Brielle: it doesnt matter

9:36:49 PM Stepha: and talk fast ---yor just a fast person

9:36:49 PM Brielle: we did this yesterday

9:36:52 PM Annie Chien: What is the role of gel electrophoresis in DNA technology? Offer several examples, both in animal and plant applications.

9:37:25 PM Brielle: match dna in cases and paternity for humans

9:37:35 PM Shannon: **to compare alleles their locations to show relationships like in paternity and crimanal cases and how plant families evolved**

9:37:45 PM Annie Chien: shannon - yes, very specific!

9:38:00 PM Annie Chien: shannon i would give you 2 marks for that

9:38:02 PM Annie Chien: brielle 1 mark

9:38:22 PM Shannon: **how many marks is it worth?**

9:38:29 PM Brielle: i wasnt finished but whatevz

9:38:30 PM Brielle: lol

9:38:30 PM Annie Chien: <http://icanhascheezburger.files.wordpress.com/2009/10/funny-pictures-cat-is-not-wearing-pants.jpg>

9:38:39 PM Brielle: idc about cats ms chien

9:38:43 PM Annie Chien: let's say 5

9:39:35 PM Shannon: **how plant families are related**

9:39:50 PM Shannon: hi

9:39:55 PM Annie Chien: hi melissa!

9:40:04 PM Melissa : i dont even know how i got in here

9:40:12 PM Annie Chien: shannon well you said that you might want to go into detail on how gel electrophoress works

9:40:13 PM Shannon: lol

9:40:13 PM Brielle: wow

9:40:15 PM Brielle: loser

9:40:18 PM Shannon: k

9:40:24 PM Annie Chien: <http://icanhascheezburger.files.wordpress.com/2009/10/funny-pictures-cat-wants-less-love.jpg>

9:40:53 PM Annie Chien: How does PCR work?

9:40:54 PM Brielle: next

9:41:06 PM Brielle: i thought we did this

9:41:17 PM Melissa M: it increases temp to seperate dna n then cools down to re connect them

9:41:24 PM Annie Chien: melissa - YES!!!!!!!!!!!!!!!!!!!!

9:41:40 PM Brielle: nice

9:41:51 PM Shannon: **doesnt t heat up a little again?**





9:57:52 PM Brielle: i did  
9:58:00 PM Brielle: i was joking  
9:58:02 PM Annie Chien: why would adding more DNA slow down the reaction?  
9:58:10 PM Stepha: use smaller amount of DNA  
9:58:17 PM Stepha: so it would have to copy more  
9:58:26 PM Annie Chien: SLOW DOWN pcr  
9:58:41 PM Annie Chien: stepha, go further  
9:58:48 PM Brielle: do it by hand  
9:58:49 PM Brielle: lol  
9:58:49 PM Annie Chien: think about what is required to do the copying  
9:58:59 PM Stepha: primers nucleotides  
9:59:05 PM Brielle: dna polymerase  
9:59:06 PM Annie Chien: what about them  
9:59:13 PM Annie Chien: how can they slow down the processs  
9:59:29 PM Shannon: **oo many enzymes means to many workers with not enough work so it will go slower**  
9:59:32 PM Shannon: **too\***  
9:59:45 PM Annie Chien: what?  
9:59:55 PM Annie Chien: ok explain that in detail  
9:59:56 PM Shannon: **to make up the difference and go to equilibrium**  
10:00:30 PM Annie Chien: explain that in detail using the roight vocab!  
10:01:07 PM Annie Chien: in order to slow down PCR, you would

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10:02:09 PM Stepha: decrease the number of enymes  
10:02:14 PM Shannon: **i have to go my dad wants to go to bed, post this on the site please**  
10:02:18 PM Annie Chien: stepha goooooood  
10:02:19 PM Brielle: ok  
10:02:20 PM Annie Chien: ok  
10:02:24 PM Stepha: bye shannon  
10:02:27 PM Annie Chien: GOOD stepha  
10:02:27 PM Brielle: deucez  
10:02:27 PM Shannon: **bye**  
10:02:29 PM Stepha: your a beast  
10:02:30 PM Annie Chien: bybye shannon  
10:02:34 PM Annie Chien: okay i have to go  
10:02:35 PM Annie Chien: its 10  
10:02:38 PM Brielle: no!!!  
10:02:40 PM Annie Chien: time to shower and sleep  
10:02:43 PM Brielle: come on  
10:02:45 PM Brielle: one more  
10:02:46 PM Stepha: sad face  
10:02:49 PM Brielle: :-(  
10:03:07 PM Brielle: :'(  
10:03:13 PM Stepha: :'(  
10:03:14 PM Annie Chien: ok see you guys Monday  
10:03:16 PM Annie Chien: good luck!  
10:03:19 PM Stepha: :'(

10:03:23 PM Brielle: fine

10:03:28 PM Stepha: :(

10:03:28 PM Brielle: just leave us

10:03:33 PM Stepha: im really crying

10:03:33 PM Annie Chien: i have to make the chat script now!

10:03:38 PM Brielle: meanie