

ONLINE REVIEW CHAT: IB BIOLOGY HL JUNIORS

2/8/2010

TOPIC: Cell Respiration

9:11:55 PM MsChien: hello

9:11:59 PM Adam: hi!

9:12:05 PM MsChien: everyone see me?

9:12:07 PM Sarah: hey you're back =)_

9:12:11 PM Adam: yep

9:12:13 PM Sarah: yeppers

9:12:36 PM Chris: im here

9:12:38 PM MsChien: tamana was around

9:12:44 PM MsChien: can someone invite her in

9:12:58 PM Sarah: what's her screenname?

9:13:13 PM Chris: xxxtamanaxxx

9:13:29 PM Sarah: it says she's not available

9:13:29 PM Chris: sorry xxxtamanaaxxx

9:13:43 PM Sarah: ok now it says she's busy lol

9:13:54 PM Sarah: apparently she has better things to do =P

9:13:56 PM Chris: whos poemperson

9:14:00 PM Sarah: sarah

9:14:06 PM Chris: nechamen

9:14:12 PM Sarah: redikilous screenname i know- it's from like 6th grade lol

9:14:16 PM Sarah: yeppers

9:14:20 PM Adam: the only sarah in bio genius

9:14:22 PM Sarah: no the other sarah in our bio class?

9:14:29 PM Sarah: yeah what adam said =)

9:14:37 PM Chris: i figured that would be adam

9:14:48 PM Chris: this is the one and only Chris

9:15:10 PM MsChien: ok we will start

9:15:16 PM Sarah: of course. claps for chris for coming to his very first online bio review! (right?)

9:15:20 PM MsChien: What is the purpose of cell respiration?

9:15:29 PM Sarah: to make ATP

9:15:30 PM Chris: to make energy in the body

9:15:33 PM Sarah: so the cell can have energy

9:15:33 PM Adam: to provide the cells with energy in the form of ATP

9:15:40 PM MsChien: yep yep yep

9:15:51 PM MsChien: What are the three stages of cell respiration?

9:15:57 PM Sarah: glycolysis

9:16:02 PM Sarah: krebs cycle

9:16:05 PM Sarah: electron chain

9:16:12 PM Chris: glycolis krebs cycle and ... i hat u sarah

9:16:15 PM Adam: glycolysis, kreb cycle, and electron chain

9:16:17 PM Sarah: =D

9:16:19 PM MsChien: very good

9:16:31 PM MsChien: Where do each of the three stages occur?

9:16:31 PM Sarah: woot

9:16:35 PM Adam: we learned electron chain stuff on friday right?

9:16:43 PM MsChien: adam, yes
9:16:44 PM Sarah: cytoplasm for glycolysis
9:16:46 PM Adam: crap
9:16:56 PM Sarah: mitochondria for krebb's cycle
9:17:00 PM MsChien: the video is on the class website
9:17:04 PM MsChien: its easier than the other two
9:17:07 PM Sarah: mitochondria membrane for electron chain
9:17:11 PM MsChien: sara yes
9:17:15 PM MsChien: sarah
9:17:45 PM MsChien: Generalized speaking, how does cell respiration obtain energy?
9:17:50 PM MsChien: generally
9:17:59 PM Chris: with atp i think,,
9:18:07 PM MsChien: how
9:18:12 PM Sarah: breaks ATP down into ADP
9:18:15 PM Adam: it creates ATP which gives off energy by breaking in to ADP
9:18:27 PM MsChien: how
9:18:36 PM Chris: idk
9:18:38 PM Sarah: lots of ways!
9:18:55 PM MsChien: how does the enegy become avaklable in the first place
9:18:56 PM Adam: it breaks up glucose ehich attaches to phosphate mlecules
9:19:02 PM MsChien: adam goodd
9:19:03 PM Sarah: glycolsysis gives net growth of 2 ATPs
9:19:15 PM Chris: and thyen when it breaks down it forms into adp
9:19:25 PM Chris: which gives off energy
9:19:26 PM MsChien: yes
9:19:30 PM MsChien: yes
9:19:50 PM MsChien: What is the difference between the energy obtained from ATP vs. NADH?

9:20:03 PM Sarah: ATP>NADH
9:20:09 PM MsChien: sarah yes
9:20:12 PM MsChien: what else
9:20:26 PM Chris: atp is used for the breaking down of molecules and nadh is used for the rebuilding of it
9:20:26 PM Adam: i do not know
9:20:47 PM Sarah: ummmmmmmmm no se
9:20:55 PM MsChien: cjris - rebuilding
9:20:56 PM MsChien: ????

9:21:09 PM Sarah: NADH helps cells make more ATP later?
9:21:16 PM MsChien: sarah yes
9:21:21 PM Chris: of the pyruvate molecules
9:21:44 PM MsChien: rebuiding????
9:21:47 PM Adam: so NADH is just like stored energy used to make more ATP later
9:21:55 PM Tamana: so ATP is ised as the overall energy for everything and NADH is used to make the ATP
9:21:56 PM MsChien: adam yes
9:22:03 PM MsChien: taman goooood
9:22:12 PM Sarah: can the cell ever get energy directly from NADH?
9:22:20 PM MsChien: sarah no
9:22:28 PM Sarah: aw poor NADH

9:22:35 PM MsChien: and fadh
9:22:38 PM MsChien: FADH
9:22:42 PM Sarah: oh yeah what's the deal with that one?
9:22:45 PM Adam: what is that?!?!?
9:22:48 PM MsChien: where do we get NAHD and FADH anyways?
9:22:54 PM Sarah: lol adam
9:23:00 PM Tamana: at the end we get FADH
9:23:05 PM Sarah: cell respiration lol
9:23:15 PM MsChien: well where did it come from?
9:23:22 PM Sarah: what is FADH??
9:23:35 PM MsChien: just another form of NADH
9:23:35 PM Sarah: i know it's from the kreb's cycle but what else?
9:23:44 PM Sarah: same function?
9:23:46 PM MsChien: its from our diet - its an enzyme
9:23:52 PM Sarah: is NADH?
9:23:55 PM Tamana: thats the net gain at the end of glycolysis and the kreb cycle
9:24:03 PM Chris: does that really matter on the test
9:24:07 PM Chris: the FADH
9:24:41 PM Tamana: obviously Chris
9:24:43 PM MsChien: i will ask you to name the products of _____
9:24:46 PM MsChien: and you would have to
9:24:54 PM MsChien: What are the products of glycolysis? Give the specific numbers.
9:25:03 PM Sarah: 1 atp
9:25:05 PM Chris: 2 atp
9:25:06 PM Adam: 4 ATP
9:25:08 PM Tamana: 2 atps and 2 nadh
9:25:15 PM Adam: and pyruvate?
9:25:15 PM MsChien: tamana good
9:25:15 PM Sarah: oh wrong one nevermind
9:25:37 PM MsChien: adam goood
9:25:40 PM MsChien: how many pyruvates
9:25:43 PM Chris: so where doe the NADHs go
9:25:47 PM Tamana: 2
9:25:50 PM MsChien: amana good
9:25:54 PM Sarah: 2
9:25:58 PM MsChien: someone answr chris' question
9:26:05 PM Sarah: electrong chain
9:26:10 PM MsChien: sarah good
9:26:11 PM Tamana: the nadh is used to make more atps
9:26:16 PM MsChien: tamana goood
9:26:25 PM Chris: oo those are the little hydrogens
9:26:35 PM MsChien: What do you think you can do to increase the rate of cell respiration?
9:26:48 PM Chris: breath more oxygen in
9:26:48 PM Sarah: i thought it gave up electrongs not protons..
9:26:51 PM Tamana: exerise
9:26:53 PM Adam: lower the temperature?
9:27:00 PM Adam: at least for magpies
9:27:05 PM MsChien: chris yes
9:27:14 PM Chris: yey me

9:27:18 PM MsChien: well maybe for magpies
9:27:21 PM MsChien: what else
9:27:26 PM Sarah: not for everyone else?
9:27:27 PM Sarah: why not?
9:27:31 PM Chris: eat more food
9:27:40 PM Chris: with sugar
9:27:44 PM MsChien: chris, yes for athletes
9:27:51 PM Chris: yey me again
9:28:16 PM Tamana: so basically exerciseing rii
9:28:32 PM MsChien: tough question: when does the body STORE the sugar you eat rather than use it for cell respiration?
9:28:48 PM Tamana: when it doesnt need it
9:29:03 PM Sarah: when there's too much
9:29:04 PM Chris: in fat cells
9:29:05 PM MsChien: tamana almsost
9:29:10 PM Adam: when there is too much of it to be all used instantly in the cellular respiration cycle?
9:29:12 PM MsChien: chis not answering question
9:29:21 PM Tamana: is that y we have body fat??
9:29:23 PM Chris: oo i thought it said where
9:29:35 PM MsChien: all very close: when the amount of food supplied exceeds the ability of cell respiration to make energy
9:29:43 PM MsChien: so yes
9:29:46 PM Adam: so i was basically right
9:29:52 PM MsChien: yes
9:29:53 PM MsChien: What are the products of the krebs cycle? Give the specific numbers.
9:30:05 PM Sarah: 1 ATP
9:30:06 PM Tamana: 1 atp...3 nadhs n 1 fadh
9:30:13 PM MsChien: ok
9:30:15 PM Sarah: yeah that
9:30:17 PM Chris: i was going to say that
9:30:24 PM MsChien: what is the role of acetyl co-a?
9:30:51 PM Chris: to bind with the pyruvate molecule
9:30:53 PM Adam: it breaks into coa and acetyl which goes in to the kreb cycle
9:30:55 PM Tamana: acetyl co a attaches to the OAA 4c and starts the cycle
9:31:07 PM Chris: oo im wrong
9:31:12 PM MsChien: tamana goooooood
9:31:34 PM Tamana: part of the CoA enzyme leaves rii
9:31:35 PM MsChien: What are the products of the electron transport chain? Give the specific numbers.
9:31:48 PM Tamana: 34 atps
9:31:57 PM Sarah: wait wait what's OAA 4C?
9:32:06 PM Sarah: or 32
9:32:14 PM Chris: is it really that much atps
9:32:18 PM Sarah: yup
9:32:21 PM Chris: why
9:32:23 PM MsChien: 34 is correct
9:32:26 PM Sarah: cannon!
9:32:34 PM MsChien: someone answer sarah's question

9:32:43 PM Sarah: yes please =)

9:32:57 PM Tamana: OAA 4c i think its the citric acis..

9:32:57 PM MsChien: what's OAA 4C?

9:33:05 PM Tamana: acid

9:33:13 PM Chris: what acid

9:33:13 PM MsChien: it makes a citric acid

9:33:26 PM Adam: citric acid is 6c

9:33:36 PM Adam: right?

9:33:42 PM Chris: omg this is so confusing

9:33:57 PM Sarah: then what's 4c?

9:33:57 PM MsChien: yes when acteyl co-a bonds with oaa, it makes citric acid which is 6

9:34:05 PM Tamana: so its just carbon molecule wating for the acetyl COa

9:34:13 PM Sarah: what's plain old oaa?

9:34:14 PM MsChien: tamana goodd

9:34:18 PM MsChien: YEssss

9:34:35 PM Sarah: what is??

9:34:54 PM Tamana: its just a carbon molecule

9:35:04 PM Sarah: oaa is or oaa 4c is?

9:35:16 PM MsChien: oaa has 4 carons

9:35:18 PM MsChien: carbons

9:35:23 PM MsChien: that was the way tamana expressed it

9:35:36 PM MsChien: What is the role of oxygen in cell respiration?

9:35:44 PM Sarah: ohhhh so the 4c is just explaining it

9:36:20 PM Adam: oh man i am going to fail this test

9:36:24 PM Tamana: i dont see oxygen in any of cycles

9:36:27 PM Sarah: seriously. yes.

9:36:27 PM Chris: the oxygen carrys out the functions just like redblood cells

9:36:37 PM MsChien: dam check out the video

9:36:38 PM Sarah: which is how?

9:36:40 PM MsChien: the video is good

9:36:45 PM Sarah: link?

9:36:48 PM MsChien: chris no

9:36:53 PM Chris: o gee

9:36:56 PM MsChien: www.mschien.com

9:36:59 PM MsChien: has all three videos

9:37:11 PM MsChien: what is the role of the oxygen molecule in ETC?

9:37:15 PM Chris: im looking at it right now

9:37:48 PM Sarah: ohhhhhhhhhh

9:38:03 PM Sarah: bonds to electrons

9:38:23 PM MsChien: so that.....

9:38:29 PM Sarah: wait how does the oxygen end up with just half the normal amount of electrons?

9:38:53 PM Tamana: Ms.chien is this what u were demonstarting in class

9:38:54 PM Sarah: cannon!!

9:39:00 PM MsChien: its briefly broken in ETC

9:39:02 PM MsChien: thanks to ATP

9:39:16 PM MsChien: very briefly

9:39:19 PM MsChien: demonstrating what?

9:39:26 PM MsChien: yes

9:39:26 PM Sarah: so where did the extra electrons go?

9:39:28 PM Tamana: with the moving back n forth to pass the electron
9:39:28 PM MsChien: all the videos
9:39:51 PM MsChien: it bonds with hydrogens around it to form water
9:39:55 PM Tamana: or was that some other molecule
9:39:57 PM MsChien: the ETC yes
9:40:17 PM Adam: wait what is ETC?!?!?!
9:40:24 PM MsChien: electron transport chain
9:40:36 PM Sarah: how do the extra electrons make water
9:40:38 PM Adam: still havent learned about that
9:40:41 PM Sarah: if it still needs another oxygen
9:40:52 PM MsChien: adam check out the video
9:41:17 PM MsChien: the extra electrons is captured by the oxygen
9:41:53 PM Sarah: but how did the oxygen end up with a lack of electrons?? where did they go?
9:42:32 PM MsChien: the O₂ that you breath in
9:42:38 PM MsChien: is breathly separated by ATP
9:42:48 PM MsChien: the O captures the electrons from the ETC
9:42:57 PM MsChien: What is the role of oxygen in cell respiration?
9:43:18 PM Sarah: but where did ITS electrons go?
9:43:50 PM Tamana: oh it says that in eectrons are transformed from glucose to enzymes and oxygen...
9:44:00 PM MsChien: the oxygen has space in its orbitals to occupy the electrons
9:44:09 PM MsChien: it really didnt loose any
9:44:18 PM MsChien: oxygen (1)
9:44:20 PM Sarah: ? but in class you said ti did..
9:44:24 PM Sarah: *it
9:44:34 PM MsChien: eh?
9:44:59 PM MsChien: i might have said that the NADH did
9:45:01 PM Sarah: you did... it's in my notes...
9:45:11 PM Tamana: so the electron from the oxygen or its energy is used to make more atps...
9:45:12 PM MsChien: thats how the electron transport chain starts
9:45:16 PM MsChien: no
9:45:27 PM Tamana: it enters the cannon is oxygen n ends up water
9:45:44 PM Chris: i really need a quick rundown of the glycolosis thing
9:46:00 PM Sarah: videos!
9:46:05 PM Tamana: ms.chien can u explain the role of oxygen...
9:46:27 PM Adam: well i watched the video,a dn now im lost in the chat and still dont really get it
9:46:33 PM Sarah: yeah i really don't get that part
9:46:46 PM MsChien: the oxygen part?
9:46:53 PM Sarah: yeah
9:46:54 PM Tamana: yes
9:47:57 PM MsChien: the oxygen acts as the receiver of the electrons at the end of this "chain"
9:48:05 PM Sarah: then what?
9:48:36 PM Adam: ther chain of what?
9:48:37 PM MsChien: in a way, it helps the electrons flow through to allow the maximum amount of protons through
9:48:44 PM MsChien: electron transport chain
9:48:50 PM Adam: what is the chain exactly?
9:49:01 PM MsChien: adam: see it the electrons are transported through the proteins?
9:49:11 PM MsChien: adam: electrons = hot potato

9:49:16 PM Sarah: how?

9:49:28 PM Sarah: for your "in a way, it helps the electrons flow through to allow the maximum amount of protons through" thing

9:49:29 PM Adam: yes, and that draws out the H⁺ molecules that are brought back in through the tubey thing to make mad ATP

9:50:17 PM MsChien: on that last protein that the electrons arrive that, the electrons arrive to be received by the oxygen

9:50:17 PM Sarah: but what does the oxygen have to do with it?

9:50:23 PM MsChien: this movement allows two more protons through

9:50:59 PM MsChien: analogy: like the guide?

9:51:18 PM Tamana: oh okay so the oxygen is waiting at the end to capture the H⁺ ions and use their energy to make ATPs...in the end up as water

9:51:26 PM MsChien: hyes

9:51:29 PM MsChien: yes

9:51:36 PM Sarah: how does it let 2 more protons through?

9:51:39 PM MsChien: how is this done is once again through electrochemistry

9:51:42 PM MsChien: charges

9:51:46 PM MsChien: attract

9:51:58 PM Tamana: in the concentration gradient rii

9:52:04 PM MsChien: rii?

9:52:09 PM Tamana: right

9:52:10 PM Sarah: ok then why does it need to be done at all? there's a ton of H⁺s already, why does it need 2 more?

9:52:12 PM MsChien: ya

9:52:16 PM Tamana: lol

9:52:17 PM Tamana: :-D

9:52:27 PM MsChien: sarah, more is better

9:52:27 PM Adam: scary smiley

9:52:36 PM MsChien: more protons, more ATPs you can make

9:52:44 PM Tamana: it is not :-)

9:53:01 PM Sarah: wow very scary

9:53:14 PM Tamana: lol...okay nex question

9:53:16 PM MsChien: the smiley or the ATPs?

9:53:24 PM MsChien: What is the difference between oxidative phosphorylation versus substrate phosphorylation?

9:53:27 PM Sarah: but why is oxygen SO vital that we can't even do cell respiration without it, if it only gives us a couple extra protons?

9:53:32 PM Sarah: wait wait wait

9:53:38 PM Adam: jeez

9:53:55 PM Chris: ok you guys i watched all the videos and i think i got an overall standing of what this is about so iam about to shower and hit the sack ill be back weds night-----peace and love lol

9:54:12 PM MsChien: because when the body senses that it does not have oxygen, it actually does not go into the krebs cycle and stops at glycolysis

9:54:14 PM Sarah: peace out yo

9:54:15 PM Sarah: =)

9:54:16 PM MsChien: making only 2 ATPs

9:54:19 PM Tamana: its valid because almost all the ATPs are made at the end with the cannon

9:54:23 PM MsChien: this is fermentation

9:54:24 PM Sarah: but why?????

9:54:35 PM Sarah: why does it do that if it doesn't have to?

9:54:49 PM Sarah: if it could just make a couple less protons and a little less atp

9:54:51 PM Adam: i think i need a class with this stuff

9:54:58 PM Sarah: it's still way more than fermentation makes

9:55:07 PM MsChien: well the oxygen also serves as a catcher of the electrons

9:55:19 PM Sarah: ohh so if it wasn't there what would happen?

9:55:24 PM MsChien: you asked today afterschool how the electrons travel throughout the membrane

9:55:27 PM MsChien: this is how

9:55:56 PM Sarah: i'm confused..

9:56:04 PM Tamana: the oxygen helps with the movement

9:56:04 PM MsChien: the oxygen is also like a "leash: for the electron TRANSPORT path

9:56:07 PM MsChien: tamana

9:56:09 PM MsChien: good

9:56:36 PM Tamana: so ur question....i have no clue

9:56:37 PM MsChien: imagine a dog on a leash

9:56:44 PM Sarah: ok but if there were no oxygen specifically what would happen?

9:56:54 PM Sarah: what damage could it do?

9:57:55 PM MsChien: no oxygen, no charge as guide, hence no leash, hence electrons have no guidance across the chain

9:58:07 PM Tamana: oxidative phosphorylation n substrate phosphorylation....

9:58:45 PM Sarah: ohhhh i get the guide thing now ok

9:58:51 PM MsChien: phosphorylation: obtaining phosphoryl group

9:59:07 PM MsChien: so in glycolysis, ADP gets the extra P from glucose

9:59:12 PM MsChien: this is SUBSTRATE level

9:59:15 PM MsChien: get it?

9:59:36 PM Sarah: what's substrate level?

9:59:46 PM MsChien: the glucose is the substrate

10:00:20 PM MsChien: get it?

10:00:28 PM Sarah: ish

10:00:35 PM MsChien: Adam remember our questions

10:00:37 PM MsChien: your

10:00:47 PM Tamana: oh i think....so after the g3p..

10:00:47 PM MsChien: im available afterschool in D21 for help

10:00:54 PM Adam: ok

10:00:56 PM Sarah: g3p?

10:00:57 PM Sarah: huh?

10:01:22 PM MsChien: its one of the rearrangements of the glucose in glycolysis

10:01:46 PM MsChien: every rearrangement has a name

10:01:49 PM Sarah: ok. do we have to know all those?

10:01:53 PM MsChien: no

10:02:02 PM Sarah: cooly =0

10:02:03 PM MsChien: just good old pyruvate and acetyl-co-a

10:02:06 PM Sarah: *)

10:02:24 PM MsChien: What is the difference between oxidative phosphorylation versus substrate phosphorylation?

10:02:32 PM Tamana: so the oxidative level would be b4 it attaches to the adp

10:02:40 PM Sarah: i have absolutely no idea.

10:02:47 PM MsChien: oxidative level happens at the ETC

10:02:59 PM MsChien: electrons are gained and lost at the protein complexes
10:03:04 PM MsChien: to generate a proton gradient
10:03:13 PM MsChien: when helps make ATPs at the ATP synthase
10:04:09 PM Tamana: SO the substrate level take place in glycolysis....where to atps are made
10:04:19 PM MsChien: yes
10:04:28 PM MsChien: but do you understand why they are named the way they are
10:04:53 PM Tamana: cuz one out and the other is inside
10:04:59 PM Tamana: idk
10:05:01 PM MsChien: oo
10:05:03 PM MsChien: no
10:05:17 PM MsChien: substrate level - you get phosphate from a substrate
10:05:39 PM MsChien: oxidative level - you get phosphate from the loss and gain of electrons (the ETC)
10:05:43 PM Tamana: the glucose
10:05:52 PM Tamana: ohhhh i get it
10:06:04 PM MsChien: what is ATP synthase?
10:06:11 PM Tamana: the cannon
10:06:20 PM MsChien: yeah and what does it do
10:07:06 PM Tamana: it captures the energy of the H ion and uses it to convert adps and to atps
10:07:13 PM Tamana: into*
10:07:13 PM MsChien: tamana: beast
10:07:26 PM Tamana: thanks
10:07:38 PM Adam: the cannon is the tubey thing in the videon right?
10:07:39 PM MsChien: that should be on our bio tshirts
10:07:43 PM MsChien: yes
10:08:04 PM Sarah: lol
10:08:32 PM MsChien: time draws close when we have to design our bio tshirts!
10:08:39 PM MsChien: in 6 months you will be seniors!
10:08:49 PM Tamana: oh we get t-shirtss...yey cant wait
10:09:17 PM MsChien: ok mschien has to go
10:09:29 PM MsChien: there is another review session on Wednesday night at 7:30
10:09:43 PM MsChien: i will be in D21 for questions
10:09:43 PM Tamana: wait the test is not tommorrow
10:09:48 PM MsChien: no
10:09:51 PM MsChien: its thursday
10:09:51 PM Tamana: what
10:09:59 PM Tamana: when did that happen
10:10:05 PM MsChien: friday
10:10:10 PM MsChien: have you checked your email
10:10:15 PM MsChien: and the class website!
10:10:24 PM MsChien: well at least you are well prepared ahead of time tamana
10:10:35 PM Tamana: umm no lol ..more time to study so yey
10:10:47 PM Tamana: okay goodnight guyss :-)
10:10:53 PM Tamana: not freaky smile...lol
10:10:57 PM MsChien: ok im gonna go
10:11:00 PM MsChien: see ya later !