

ONLINE REVIEW CHAT: IB BIOLOGY HL JUNIORS 2.10.2010

TOPIC: Cell Respiration

7:29:54 PM **MsChien**: invite people in
7:30:43 PM **Maddie**: i have no one else.
7:30:48 PM **MsChien**: ok
7:31:03 PM **ANISA**: Hello!
7:31:13 PM **ANISA**: whos brooklyn?
7:31:17 PM **MsChien**: nyc
7:31:25 PM **MsChien**: what
7:31:30 PM **OMA**: oma
7:31:36 PM **ANISA**: Oma, nice.
7:31:51 PM **OMA**: thank you
7:32:26 PM **ANISA**: I'm ready to get down, and learn
7:32:42 PM **MsChien**: finally, something different than getting sick!
7:32:50 PM **MsChien**: we will start in three minutes
7:32:52 PM **Maddie**: haha
7:32:55 PM **Tamana**: Hii
7:32:57 PM **MsChien**: and why do only the girls always show up
7:33:01 PM **Maddie**: hello tamana
7:33:08 PM **Maddie**: im usually not here
7:33:12 PM **Sarah**: cuz we're the dedicated ones
7:33:17 PM **Sarah**: you should throw us a party
7:33:17 PM **ANISA**: Because girls rule, boys drool
7:33:18 PM **ANISA**: duh
7:33:19 PM **Maddie**: but the guys are busybodies
7:33:25 PM **Maddie**: yeah, PARTY
7:33:33 PM **Tamana**: lol...
7:33:40 PM **Maddie**: but you actually still owe me a snickers.
7:33:41 PM **Maddie**: =]
7:33:42 PM **ANISA**: the boys in our class with the exception of Javeed and Steven
7:33:44 PM **ANISA**: are all girls.
7:33:46 PM **MsChien**: oh yeh i forgot
7:34:18 PM **ANISA**: And sometimes Chris Q.
7:34:41 PM **Tamana**: haha...n ms.chien dont forget the water
7:34:44 PM **ANISA**: He's like the Y in A, E, I, O, and U
7:34:53 PM **MsChien**: sarah and tamana some of the questions are repeated from last time
7:35:01 PM **Tamana**: kay..im ready
7:35:03 PM **Sarah**: haha anisa
7:35:03 PM **ANISA**: Repetition is key.
7:35:05 PM **Sarah**: and okiedokies
7:35:15 PM **ANISA**: Repetition is key.
7:35:24 PM **MsChien**: some new questions
7:35:28 PM **MsChien**: KNOWING is key
7:35:36 PM **MsChien**: know it cause you love it
7:35:41 PM **ANISA**: you form knowledge through repetition
7:35:44 PM **MsChien**: like you make balloon animals

7:35:45 PM Sarah: no more about knowing!! ga TOK
7:35:50 PM Tamana: Ms.chien hows ur mommy??
7:35:53 PM ANISA: I HATE T.O.K
7:35:57 PM ANISA: moving on...
7:35:57 PM MsChien: she will survive
7:36:01 PM MsChien: until next time
7:36:05 PM ANISA: At first she was afraid
7:36:05 PM Sarah: ?
7:36:09 PM ANISA: she was terrified
7:36:23 PM ANISA: I hope this all goes on the website.
7:36:31 PM MsChien: yes but you need to participate!
7:36:34 PM MsChien: SLAP!
7:36:42 PM MsChien: let's begin
7:36:43 PM MsChien: What is the purpose of cell respiration?
7:36:50 PM Sarah: to form ATP
7:36:52 PM ANISA: to form energy
7:36:54 PM ANISA: y
7:36:57 PM Sarah: which provides energy for the cells
7:37:01 PM MsChien: good good good
7:37:09 PM MsChien: What are the three stages of cell respiration?
7:37:09 PM ANISA: To survive
7:37:16 PM Sarah: glycolysis
7:37:19 PM ANISA: glycolosis
7:37:21 PM ANISA: kreb
7:37:21 PM Sarah: kreb's cycle
7:37:25 PM Sarah: ETC
7:37:26 PM ANISA: and....
7:37:27 PM MsChien: anisa: survive is too general
7:37:28 PM Tamana: ETC
7:37:29 PM ANISA: ETC
7:37:31 PM Maddie: electron transport train
7:37:31 PM MsChien: good good good
7:37:32 PM Sarah: aka electron transport chain
7:37:34 PM MsChien:
gooo
7:37:38 PM OMA: oxidative phosphorylation
7:37:48 PM MsChien: three main ones
7:37:49 PM ANISA: what's that Oma?
7:37:56 PM MsChien: is that a question oma?
7:38:04 PM Tamana: the gaining of Phosphate in the ETC
7:38:06 PM OMA: no isn't that the last step?
7:38:13 PM Sarah: no ETC is
7:38:13 PM MsChien: its involved in the last step yes
7:38:21 PM MsChien: but basically yes ETC
7:38:27 PM ANISA: Wait in order it goes Glycolosis, Krebs, and ETC?
7:38:32 PM OMA: if i write that down on the test would i get full credit?
7:38:32 PM Sarah: yep
7:38:57 PM Sarah: yep to anisa not oma sorry lol

7:39:12 PM **MsChien**: hmmm Anisa brings us to a new question, Explain why the order to glycolysis, krebs and ETC makes sense.

7:39:35 PM **Sarah**: glycolysis forms pyruvic acid which is needed to start krebs cycle

7:39:35 PM **MsChien**: oma yes

7:39:41 PM **ANISA**: its all a process you can run until you crawl

7:39:48 PM **ANISA**: *cant

7:40:05 PM **ANISA**: So glycolosis forms two pyruvic acids

7:40:08 PM **MsChien**: sarah good start

7:40:09 PM **Tamana**: glycolysis results in 2 pyruvic acidss

7:40:14 PM **MsChien**: good good

7:40:14 PM **Maddie**: glycolysis makes pyruvate that goes into the kreb cycle

7:40:18 PM **MsChien**: ok

7:40:21 PM **ANISA**: and without those two pyruvic you can not start krebs cycle

7:40:26 PM **MsChien**: ok

7:40:31 PM **MsChien**: why is the kreb cycle next

7:40:46 PM **Tamana**: which lose an electron n acetyl CoA

7:40:52 PM **Sarah**: the first 2 make NADH which is needed in ETC

7:41:11 PM **Tamana**: the rest attaches to the carbon group n starts the kreb cycle

7:41:21 PM **ANISA**: Kreb is next because it takes the two pyruvic acids and do what with it?

7:41:29 PM **ANISA**: *does

7:41:34 PM **Tamana**: which results in NADH

7:41:56 PM **MsChien**: but why is the kreb cycle the next logical step?

7:42:07 PM **Tamana**: to form NADH

7:42:10 PM **MsChien**: why?

7:42:15 PM **Maddie**: cause it uses the pyruvate

7:42:20 PM **Tamana**: so the Hydrogen ion can be used in the ETC

7:42:23 PM **Sarah**: b/c you can't have ETC next b/c NADH needs to be formed during that cycle

7:42:25 PM **ANISA**: nadh helps to get to the process of energy

7:42:27 PM **ANISA**: its like a taxi

7:42:27 PM **Nick**: because it breaks down the product of glycolysis, pyruvic acid

7:42:31 PM **Sarah**: and b/c of location?

7:42:37 PM **ANISA**: right?

7:42:47 PM **MsChien**: SARAH good

7:42:52 PM **Tamana**: the energy from the hydrogen ions is used to turn ADP into ATP

7:42:56 PM **MsChien**: NICK: whats the purpose of all the breakdown

7:43:02 PM **MsChien**: Tamana good

7:43:04 PM **Maddie**: ENERGY!

7:43:13 PM **Nick**: of what?

7:43:16 PM **ANISA**: wait...

7:43:18 PM **Sarah**: ok so when pyruvate goes into mitochondria, where in mitochondria is it going?

7:43:19 PM **MsChien**: ok so why is the ETC the next logical step

7:43:26 PM **Nick**: oh i see, energy

7:43:42 PM **MsChien**: sarah: matrix

7:43:52 PM **ANISA**: Ms Chien. The pyruvates form NADH?

7:43:57 PM **Nick**: because all the NADH and FAD₂ need a place to go and they are used to make ATP in the ETC

7:44:03 PM **ANISA**: and then an ion is taken from there? PLEASE EXPLAIN.

7:44:11 PM **MsChien**: nick good

7:44:20 PM **Nick**: get em

7:44:25 PM MsChien: anisa: yes and no - stop memorizing and start KNOWING!
7:44:28 PM Sarah: location again? =)
7:44:35 PM MsChien: sarah, which one?
7:44:37 PM OMA: matrix
7:44:37 PM MsChien: ETC?
7:44:38 PM ANISA: I'm trying
7:44:41 PM Nick: intermembrane
7:44:50 PM Nick: space
7:45:12 PM Sarah: ETC starts in matrix, though the H ions move through inner membrane later
7:45:16 PM Tamana: wiat so can u summerize what the prupose of the order...it has to do with the location
7:45:20 PM MsChien: sarah yes
7:45:35 PM MsChien: tamana, i dont speak tamana-nese
7:45:37 PM MsChien: what????!?!??
7:45:46 PM Nick: haha
7:45:50 PM Tamana: whats the purpose of the order of the cyces
7:45:54 PM ANISA: chris bland does
7:45:55 PM Tamana: cycles*..
7:46:09 PM Maddie: yeah he does
7:46:17 PM Sarah: lol
7:46:18 PM Tamana: hahahah :P
7:46:28 PM MsChien: yes, I want to know why the "assembly line" of cell respiration makes sense
7:46:40 PM MsChien: dont give me step by step, but discuss it
7:46:44 PM MsChien: overall in general
7:46:46 PM MsChien: whats the big idea
7:46:54 PM MsChien: what is the process trying to do
7:46:56 PM ANISA: I got lost as to why it makes sense after the first step-glycolosis.
7:47:10 PM Maddie: make energy
7:47:10 PM Sarah: b/c takes less energy to move around if it's not moving around unnecessarily
7:47:31 PM Tamana: use the energy it creates in one cycle and use it in the next to end up with all those ATPS
7:47:36 PM OMA: the process is taking glucose, breaking it down, collecting the electrons. and harvesting them for energy
7:47:39 PM MsChien: tamana good
7:47:46 PM MsChien: OMA: EXCELLENT!!!!!!!!!!!!!!!!!!!!!!!!!!!! PERFECT!
7:47:46 PM Sarah: so having the next step be in a place right by the previous one uses less energy and makes more sense
7:48:02 PM MsChien: sarah, so you are just talking about location wise
7:48:08 PM MsChien: i am talking about process wise
7:48:31 PM Nick: so it is logical b/c glucose must be broken down and electrons must be harvested?
7:48:31 PM Maddie: i dont understand the question
7:48:47 PM Maddie: like how are we suppose to know that?
7:48:58 PM MsChien: you have to understand the big idea of cell respiration
7:49:15 PM Maddie: well i dont
7:49:16 PM MsChien: like, Why isnt ETC the first step?
7:49:18 PM Sarah: make energy! that's the big idea
7:49:33 PM Maddie: it needs the electrons from the other steps and the engery?
7:49:35 PM MsChien: answer the question everyone: why isn't ETC the first step?
7:49:39 PM MsChien: maddie: YESSSSSSSSSSSSSSSS!
7:49:44 PM Sarah: b/c doesn't have the NADH yet
7:49:46 PM OMA: etc isn't the first step because their aren't any electrons to be harvested
7:49:48 PM MsChien: sarah good
7:49:52 PM MsChien: Oma good
7:49:57 PM MsChien: good good good

7:50:12 PM ANISA: so glucose needs to go through the steps and be broken down

7:50:14 PM Tamana: ETC requires the hydrogen ions to turn the ADP into ATP

7:50:18 PM ANISA: in order to extract electrons

7:50:18 PM MsChien: anisa good

7:50:22 PM Sarah: why do you need ATP for that step?

7:50:23 PM ANISA: and thus form energy?

7:50:23 PM MsChien: tamana good

7:50:25 PM Tamana: which comes from the the kerb cycle rii

7:50:31 PM ANISA: without the breakdown you can't have energy?

7:50:35 PM Maddie: yeah

7:50:38 PM MsChien: Sarah: ATP is used for other processes in the cell

7:50:44 PM MsChien: rii??!?!?

7:50:47 PM MsChien: what is this riii?

7:50:49 PM Tamana: right

7:50:52 PM MsChien: anisa yes

7:51:01 PM Tamana: lol..we discussed this last time too..

7:51:02 PM MsChien: i have to know tamana-nese

7:51:11 PM Sarah: but couldn't you just go from glycolysis to ETC? if you just need an NADH?

7:51:12 PM Tamana: u said u did

7:51:17 PM MsChien: What is the difference between the energy obtained from ATP vs. NADH?

7:51:20 PM Maddie: even though it takes energy to break the glucose down in the end it makes more energy, right?

7:51:41 PM Sarah: NADH is more like potential energy, doesn't give cell energy directly but used to make ATP which does

7:51:46 PM MsChien: Sarah: check out how much NADH the kreb cycle makes

7:51:53 PM MsChien: maddie yes!

7:51:54 PM Sarah: or gives cell just a little energy?

7:52:01 PM ANISA: atp

7:52:02 PM OMA: nadh is just a carrier of electron whereas atp can be broken down for energy

7:52:03 PM Tamana: ATP is used is the general energy form for everything whereas NADH is used to continues the process of cell respiration

7:52:04 PM ANISA: is direct

7:52:05 PM MsChien: sarah es

7:52:08 PM MsChien: oma yes!

7:52:10 PM ANISA: nadh is not so direct

7:52:13 PM ANISA: energy wise

7:52:14 PM MsChien: TAMANA! yes!

7:52:16 PM MsChien: good good

7:52:21 PM MsChien: anisa yes

7:52:31 PM MsChien: <<<----- does the hamster dance

7:52:45 PM Maddie: haha

7:52:49 PM Sarah: isn't that what i said? confused..

7:52:55 PM Sarah: lol hamster dance?

7:53:05 PM Nick: how do redox rxn's come into play?

7:53:11 PM ANISA: hamster dance, classic.

7:53:21 PM MsChien: <http://www.webhamster.com/>

7:53:25 PM ANISA: I don't get the last twowords on the concept map yesterday

7:53:29 PM MsChien: hyson, good question!

7:53:35 PM Sarah: NAD gains electrons to become NADH, so it goes through r eduction

7:53:35 PM ANISA: I forgot what they were but I didnt understand where they come into play

7:53:46 PM Sarah: opposite for oxidation

7:53:56 PM Nick: HOLD ON

7:54:02 PM MsChien: sarah just answered hyson's question!

7:54:04 PM Maddie: OMG THE HAMSTERS!

7:54:14 PM Nick: all this talk about electrons, do we mean hydrogen ions?

7:54:28 PM Sarah: no, those lack an electron

7:54:31 PM Nick: H+ would not reduce the charge though

7:54:36 PM Tamana: because of the charges of the the electrons..they're able to move through the ETC

7:54:43 PM Maddie: but the are used as an electron

7:55:01 PM MsChien: H and NAD are electron carriers

7:55:17 PM Maddie: chyeah, and thats why they bond together

7:55:20 PM Sarah: ? H+ can't be used as an electron can it, it's like a proton..

7:55:22 PM MsChien: maddie ; good

7:55:33 PM OMA: its h-

7:55:36 PM Maddie: no

7:55:38 PM Maddie: its both

7:55:39 PM Maddie: haha

7:55:43 PM MsChien: H+

7:55:45 PM Nick: all the diagrams said h+

7:55:52 PM Sarah: how could they be electron carriers, H+ doesn't even have an electron

7:55:53 PM Nick: ?

7:55:54 PM MsChien: + means lack of electrons

7:55:58 PM Maddie: yeah it does

7:56:01 PM Nick: my point

7:56:02 PM Maddie: it has 1

7:56:11 PM MsChien: it CAN carry one electron

7:56:11 PM Sarah: no that's why it's H+ b/c it's lacking one

7:56:14 PM Maddie: thats why its used as an electron

7:56:14 PM Nick: so it becomes double positive?

7:56:22 PM Sarah: no, then it becomes neutral

7:56:25 PM MsChien: i think we are all talking about the same thing

7:56:29 PM Maddie: yeah

7:56:32 PM Sarah: + plus electron = nothing

7:56:35 PM Nick: still dont get it

7:56:44 PM MsChien: what is the question nick clarify

7:56:57 PM Maddie: no because its + one needing one to fill its outer circle

7:57:14 PM Nick: im just fuzzy about redox rxns and hydrogen ions and their charge

7:57:32 PM Sarah: H ions have a positive charge b/c they're missing an electron

7:57:38 PM MsChien: ok one thing at a time: do you understand the redox reaction as sarah explained it?

7:57:40 PM Sarah: same with NADH+

7:57:51 PM Nick: slightly

7:57:55 PM Maddie: because they need one. no cause hydrogen generally needs on

7:58:04 PM Maddie: 2 fills it but it only has one

7:58:09 PM Tamana: can someone remind me what redox stood for...i forgot

7:58:31 PM Sarah: short for reduction and oxidation

7:58:43 PM MsChien: as each protein in the ETC accepts two electron and then looses it to the next protein in the chain, you have Redox and oxidization happening

7:59:20 PM MsChien: protein gains two electrons = redox

7:59:27 PM Sarah: oh yeahhhhhh

7:59:32 PM MsChien: protein looses electron - oxidation

7:59:34 PM Tamana: as it looses and gains electron doesnt that create energy...where does that go?

7:59:38 PM MsChien: so this process goes down the chain

7:59:46 PM Maddie: reduction is gaining
7:59:52 PM MsChien: yes
8:00:10 PM MsChien: nick?
8:00:27 PM Sarah: why does it create energy?
8:00:37 PM ANISA: the movement?
8:00:37 PM Nick: so NADH gives off an electron, NOT a hydrogen ion
8:00:38 PM Nick: ?
8:00:54 PM Sarah: yes
8:00:58 PM Maddie: are you sure?
8:01:00 PM MsChien: yes
8:01:01 PM MsChien: yes
8:01:05 PM Nick: wait the diagram says both
8:01:08 PM Sarah: the H ion is still there, it just looks like the + in NAD+ now
8:01:13 PM Maddie: im pretty sure that hydrogen ion is an electron
8:01:13 PM Nick: wait I GOT IT!
8:01:17 PM MsChien: ok good
8:01:28 PM Sarah: no b/c it's positive, electrons are negative
8:01:32 PM MsChien: good good
8:01:34 PM Sarah: lol
8:01:34 PM MsChien: <http://www.webhamster.com/>
8:01:43 PM Maddie: no.
8:01:44 PM MsChien: another hamster dance moment
8:01:53 PM Sarah: !!!!!!!!!!!!!!!
8:01:57 PM MsChien: what is the role of acetyl co-a?

8:02:03 PM Nick: NADH-H+ breaks off and passes through the protein and it loses an electron which passes through the ETC
8:02:30 PM Sarah: breaks into CoA and 6C, starting kreb's cycle
8:02:46 PM MsChien: sarha good
8:03:09 PM Tamana: so NADH loses and electron n a hydrogen ion...im confused ms.chien
8:03:16 PM Sarah: wait nick what? just the electrons pass through the proteins i think
8:03:25 PM Sarah: it doesn't lose a hydrogen ion...
8:03:33 PM Nick: look at the packet ms chien gave us
8:03:36 PM MsChien: What is the role of oxygen in cell respiration?

8:03:48 PM Tamana: then where do all those hydrogen ions come frm...
8:03:59 PM MsChien: water in the cytoplasm
8:04:01 PM MsChien: water all over
8:04:11 PM Sarah: yeah it says the 2 NAD+ break off and go away, just the electrons stay in the proteins
8:04:16 PM MsChien: and from ionization of NADH's
8:04:20 PM MsChien: i think you are all saying te same thing
8:04:25 PM MsChien: What is the role of oxygen in cell respiration?

8:04:27 PM Sarah: from other steps?
8:04:35 PM Sarah: i don't think we all are..
8:04:41 PM Nick: so NADH loses an electron and a H ion?
8:04:42 PM ANISA: to form ATP
8:04:55 PM MsChien: ANisa: how?
8:04:56 PM Tamana: oxygen combines with hydrogen to form water
8:04:57 PM ANISA: Without oxygen that wouldn't be made possible
8:04:59 PM MsChien: why is oxygen important
8:05:01 PM Sarah: mschien does it lose an H+ or not? methinks that's what we're arguing over
8:05:06 PM MsChien: anisa: give aexample

8:05:13 PM Sarah: wait can you settle this first please?
8:05:22 PM MsChien: the H
8:05:23 PM ANISA: Because it is what is shot through ATP synthase to create most of the ATP
8:05:28 PM MsChien: ionization issue?
8:05:32 PM Sarah: it does lose an H+?
8:05:35 PM MsChien: yes it breaks and ionizes
8:05:36 PM Nick: ahhh what?!
8:05:40 PM Maddie: im still sure that a hydrogen ion is used as an electron
8:05:48 PM MsChien: ionizes = break apart into ions
8:05:49 PM Nick: so i was right?
8:05:55 PM MsChien: NAD+ and H+
8:05:58 PM Nick: no maddie
8:05:59 PM MsChien: yes
8:06:01 PM Sarah: yeah what? the chart says it just stays with the NAD
8:06:15 PM Nick: alright i got it now
8:06:26 PM Sarah: but doesn't NAD+ mean a hydrogen ion's there?
8:06:35 PM Nick: so NADH gets oxidized correct?
8:06:35 PM Tamana: the oxygen helps the electron movement through the ETC...which results in the creation of ATP
8:06:43 PM Sarah: isn't that what the plus is?
8:06:49 PM MsChien: tamana yes
8:06:51 PM MsChien: anisa yes
8:06:56 PM Sarah: or does the D lack an electron?
8:07:01 PM MsChien: the + indicates a loss of electron
8:07:13 PM MsChien: which means that it has the POTENTIAL to gain one
8:07:14 PM Sarah: yeah but by who?
8:07:19 PM Nick: so NADH gets oxidized correct?
8:07:19 PM Sarah: the D?
8:07:20 PM MsChien: + means empty seat for electron
8:07:23 PM MsChien: nick yes yes
8:07:29 PM Nick: good
8:07:38 PM MsChien: Sarah you got it
8:07:41 PM ANISA: what is oxidized mean?
8:07:42 PM MsChien: H+ is a proton
8:07:51 PM Nick: loses an electron
8:07:59 PM MsChien: + simply means lack of electrons, with potential to gain an electron
8:08:04 PM MsChien: anisa did you get that?
8:08:10 PM Maddie: then why does it combine with them
8:08:13 PM ANISA: Yes, I understand that.
8:08:15 PM Maddie: if its just a proton
8:08:36 PM MsChien: maddie: because now it has a position to combine with another molecule with an electron to contribute
8:08:38 PM MsChien: empty seat
8:08:48 PM MsChien: see why chemistry is so important???
8:08:53 PM MsChien: you gotta love Ms. Phillips
8:09:07 PM Maddie: so it has an electron
8:09:08 PM Nick: i sure do
8:09:11 PM Maddie: so its used as one
8:09:16 PM ANISA: Ms. Chien. Alex is here now.
8:09:22 PM Sarah: lol yeah, unfortunately i forgot everything about chem the day after the regents..
8:09:22 PM MsChien: invite him in!
8:09:32 PM Tamana: NADH gets oxidized because it had the potential of losing an electron
8:09:32 PM ANISA: No, he's next to me.

8:09:44 PM Nick: it DID lose an electron
8:09:47 PM MsChien: oh
8:09:53 PM Maddie: im extremely confused
8:09:54 PM Sarah: lol
8:09:55 PM MsChien: ANISA: ASK HIM QUESTIONS
8:09:57 PM Nick: yo a hu you are mad cute
8:09:59 PM MsChien: DO NOT IGNORE HIM
8:10:02 PM MsChien: HE WOULD BE A GOOD TUTOR
8:10:10 PM ANISA: oxidation means losing an electron(s)?
8:10:14 PM Sarah: maddie H+ isn't an electron, but NADH does lose an electron in addition to the H+
8:10:21 PM Nick: yes
8:10:26 PM ANISA: I never ignore him. He's my man.
8:10:32 PM MsChien: ANISA: Tell alex that if *YOU* get 90, I can treat you both to that dinner he was talking about
8:10:55 PM Maddie: then why are there all the h+ in the electron transport chain?
8:10:55 PM MsChien: ok next question
8:10:55 PM ANISA: so much pressure. I'll do it. I'll try to do it, at least.
8:11:03 PM Maddie: i dont understand how that works
8:11:06 PM MsChien: he can tell you about that dinner, its cool
8:11:10 PM Maddie: what electrons are being used?
8:11:23 PM MsChien: Maddie: the eelctrons from the NADH
8:11:24 PM Sarah: like how'd they get there maddie?
8:11:32 PM Sarah: oh nevermind
8:11:37 PM Maddie: how?
8:11:46 PM Maddie: if hydrogen isnt an electron
8:11:46 PM Nick: maddie, a neutral NADH comes in, loses a H+, and electrons and the product is NAD+
8:12:01 PM Maddie: electrons dont just float around
8:12:04 PM Maddie: ugh
8:12:09 PM Sarah: they aren't
8:12:11 PM MsChien: maddie: every time a molecule is broken, electrons are exposed
8:12:12 PM Nick: they go through the chain
8:12:12 PM Sarah: the H+ are
8:12:13 PM Maddie: ill just talk to you after.
8:12:23 PM ANISA: Can someone give me examples of where Oxidation and Reduction both play roles in Cell Respiration.
8:12:26 PM ANISA: ?
8:12:32 PM MsChien: so yes, they free flow from NADH break down
8:12:43 PM Maddie: co2
8:12:43 PM Sarah: NADH/NAD+, and electrons going through the proteins
8:12:53 PM Tamana: Nick..what happens once they flow throw the chain???
8:13:08 PM MsChien: What is the role of the protein complexes in cell respiration?
8:13:18 PM MsChien: this question ties into Anisa and tamana's question
8:13:20 PM ANISA: Specific Examples, and where the Oxidation and Reduction are occurring.
8:13:22 PM Maddie: to make tooonnnnnss of ATP
8:13:26 PM Sarah: guide electron tthrough membrace
8:13:29 PM Tamana: they provide the electrons to flow through
8:13:30 PM Sarah: *membrane
8:13:30 PM MsChien: maddie yes, how?
8:13:33 PM MsChien: sarah good

8:13:37 PM ANISA: To lure H out of the membrane
8:13:38 PM Maddie: ATP synthase
8:13:39 PM Nick: they create a charged gradient so H⁺ ions will diffuse through
8:13:43 PM MsChien: anisa good
8:13:44 PM Sarah: so that H⁺ can go across to toher side so they can go into the cannon
8:13:45 PM MsChien: nick good
8:13:48 PM Tamana: their charges
8:13:51 PM MsChien: sarah good
8:13:55 PM Maddie: takes electrons for engery to make ATP from ADP
8:13:56 PM ANISA: To be shot through ATP Syntase using the concentration gradient
8:13:57 PM MsChien: so what if the oxygen wasnt there
8:14:02 PM MsChien: anisa good
8:14:05 PM MsChien: use your man
8:14:07 PM MsChien: make him useful
8:14:11 PM Sarah: do the proteins directly help H⁺ go through or is it just cuz of the electrons?
8:14:14 PM Maddie: HAHAHAAAA
8:14:26 PM ANISA: ATP Synthase and electron transport would be rendered unfunctionable
8:14:32 PM MsChien: sarah, its cause of the electrons and the oxygen "guide"
8:14:36 PM ANISA: It's just me :O
8:14:42 PM ANISA: ^Alex.
8:14:46 PM MsChien: Anisa: how?
8:14:48 PM Nick: guide?
8:14:49 PM Sarah: so the proteins' charges have nothing to do with it? directly?
8:15:00 PM MsChien: it does just to guide it across
8:15:03 PM MsChien: when it is in
8:15:13 PM Nick: huh?
8:15:15 PM ANISA: What are we talking about exactly
8:15:15 PM MsChien: but the electrons bring the H⁺ in
8:15:17 PM Sarah: so not directly then. okiedokies
8:15:24 PM MsChien: its a sarah super question
8:15:26 PM Nick: okayyyy
8:15:27 PM MsChien: SSQ
8:15:31 PM Sarah: is not!
8:15:35 PM Sarah: SSQ?
8:15:36 PM MsChien: that should be on a tshirt
8:15:42 PM MsChien: SSQ: Are you up for it?
8:15:44 PM Nick: oh ms chien
8:15:49 PM Maddie: haha
8:15:52 PM Sarah: ohhhh i get it
8:15:54 PM MsChien: I like it
8:15:56 PM Sarah: silly peoples
8:16:01 PM Nick: so what do we HAVE to know?
8:16:07 PM MsChien: SSQ: only the Beast can tackle
8:16:10 PM Nick: ms chien, for the test
8:16:12 PM MsChien: nick everything
8:16:18 PM Maddie: thats no fun
8:16:23 PM Nick: barf
8:16:28 PM Maddie: agreed
8:16:39 PM MsChien: ok so let me again, what if the xoxygen is not there, what would happen to the ETC EXACTLY????
8:16:48 PM Sarah: couldn't happen
8:16:50 PM Sarah: wouldn't start
8:16:55 PM MsChien: how?

8:17:01 PM Sarah: b/c electron wouldn't be guided through proteins so no end result
8:17:07 PM MsChien: Sarah, perfect
8:17:08 PM OMA: the electron wouldn't be able to flow from one protein to the other
8:17:12 PM MsChien: oma: best
8:17:24 PM Nick: what effect does oxygen have?
8:17:25 PM MsChien: BEAST i mean
8:17:28 PM Sarah: though don't the proteins' different charges help guide the electron too? is that not enough?
8:17:34 PM MsChien: someone answer nick's question
8:17:45 PM Maddie: look up and through the oxygen question
8:18:03 PM Sarah: guides electron through proteins
8:18:06 PM ANISA: What creates the water, ATP Synthase or the Electron leaving the chain?
8:18:08 PM MsChien: sarah, might. but oxygen pushes for more guidance
8:18:09 PM Nick: why does it want e-'s?
8:18:20 PM ANISA: Electro Negativity
8:18:28 PM ANISA: Bro
8:18:36 PM OMA: it's like gravity...oxyden is at the bottom pulling the electrons downwards thru the proteins
8:18:43 PM OMA: oxyden*
8:18:48 PM OMA: oxygen*
8:18:53 PM MsChien: Nick, oxygen you break gets broken down in teh cell, and for a breif moment, one Oxygen has a seat
8:18:55 PM Sarah: ^^
8:18:56 PM Nick: so the electrons want to get to the oxygen, where they meet with the H+ ions to form water
8:18:58 PM Nick: correct?
8:19:11 PM MsChien: yes
8:19:15 PM Nick: okay
8:19:16 PM MsChien: oma yes!
8:19:27 PM MsChien: some folks are just beast when it comes to the stuff that most people dont get
8:19:34 PM Maddie: yeah..
8:19:45 PM MsChien: you guys are like rain man
8:19:48 PM Sarah: like kathryn. crazy person actually likes this unit lol
8:19:54 PM Maddie: haha
8:20:01 PM Nick: back to redox, what do we need to know?
8:20:06 PM MsChien: ETC
8:20:14 PM MsChien: Which protein in the ETC generates ATP?
8:20:24 PM MsChien: directly
8:20:25 PM Nick: ATYP synthase
8:20:25 PM Sarah: ATP synthase
8:20:28 PM Sarah: canon!
8:20:29 PM MsChien: goooooooooooooooooooooo
8:20:31 PM MsChien: goooooooooooooooooooooooooooooooooooooo
8:20:38 PM Nick: yeah man
8:20:43 PM Sarah: woot
8:20:52 PM MsChien: ok we are done
8:20:56 PM ANISA: How exactly does the ATP Synthase use the Hydrogen to make ATP, like how does it harness the energy?
8:21:01 PM Sarah: or not lol
8:21:08 PM MsChien: someone answer anisa's questio
8:21:09 PM MsChien: n
8:21:14 PM Nick: no idea
8:21:26 PM Maddie: the concentration gradient
8:21:32 PM Maddie: it comes through

8:21:33 PM MsChien: maddie keep going
8:21:37 PM ANISA: No I mean when it comes through
8:21:40 PM ANISA: Like
8:21:44 PM Sarah: mroe quickly so makes more in less time
8:21:45 PM Tamana: atp synthase captures the energy of the Hions and uses it to trun ADP into ATp
8:21:56 PM MsChien: tamana yes
8:22:00 PM Sarah: with phosphates from glycolysis
8:22:04 PM MsChien: sarah
8:22:05 PM MsChien: yes
8:22:12 PM ANISA: That's what I'm confused about
8:22:18 PM ANISA: How does it HARNESS the energy
8:22:28 PM Maddie: who knows
8:22:29 PM Nick: just nabs it
8:22:31 PM MsChien: anisa: if you look at a closer photo of ATP synthase it looks like a ferris wheel
8:22:38 PM Maddie: thats like hardcore looking into that stuff
8:22:42 PM Sarah: wait wait wait that was in my notes but how can it take phosphates from glycolysis when they were all usedto make ATP in that step already?
8:22:53 PM MsChien: the H+ goes through FAST, and this generates a lot f kinetic energy at one end
8:22:59 PM Tamana: remember the body recycless
8:23:01 PM MsChien: this energy is use to make ATP
8:23:09 PM Maddie: they just chill there, theres always phostphates
8:23:22 PM ANISA: What happens to the Hydrogen when it's shot through, does it just float around or does it attach to something?
8:23:22 PM MsChien: P are everywhere sarah
8:23:28 PM MsChien: MAAADDIEE!
8:23:30 PM MsChien: GOOOD!
8:23:32 PM Sarah: from where? they can't just come from water like the H+
8:23:41 PM MsChien: someone answer anisa's question
8:23:42 PM Maddie: yeah i pay attention when i can;p
8:23:56 PM Maddie: WATER!
8:23:59 PM MsChien: maddie: you mean when you CHOOOOOOOSE to
8:24:01 PM MsChien: maddie good
8:24:05 PM Maddie: hehe
8:24:12 PM ANISA: Turns into water?
8:24:15 PM Maddie: you know me too well ms chien
8:24:19 PM Maddie: yeah
8:24:20 PM Sarah: where did the phosphates originally come from?
8:24:27 PM ANISA: All of it?
8:24:27 PM Maddie: your body has them
8:24:30 PM MsChien: break down of ATP from other reactions in the cell
8:24:36 PM MsChien: remember there are MILLIONS of cells
8:24:39 PM Sarah: ohhh yeah that makes sense ok
8:24:39 PM MsChien: doing cell respiration
8:24:44 PM MsChien: MADDIE, SHUDDUP!
8:24:48 PM MsChien: :-)
8:25:00 PM Maddie: but im right, am i not?
8:25:02 PM MsChien: si