Hibernation on demand (Sat 23 Apr, 2005)

WARM-UPS

CHAT: Talk in pairs or groups about: hibernation / mice / trauma and disease / sleep / voyages to other planets / science fiction / suspended animation… For more conversation, change topics and partners frequently.

SCIENCE FICTION BRAINSTORM: Spend one minute writing down words you associate with science fiction. Talk about your words with your partner.

SPACE JOURNEY: Students A have spent five years on a space rocket to Saturn, half spent in hibernation. They loved rocket life (and hibernation). Get together and discuss all the great things you experienced. Students B are simple humans and want to know all about life on the rocket. Make a list of questions for the students who lived on the rocket. Students A and B pair up and talk about the journey into space.

ANIMAL FUNCTIONS: Hibernation is a basic survival function for many animals. Which of the following animal abilities would you like scientists to make available for humans?

hibernation / the longevity of tortoises (150 years) / the sonar of a bat / the speed of a cheetah / the hearing of a dog / flight / breathing underwater like fish / changing colors like a chameleon / others?

THE FUTURE: What will scientific breakthroughs allow us to do in the future? Look at the following list and talk about the possibility or impossibility of these things happening, when they might happen, and the benefits. Change partners and repeat the activity, using the ideas you previously heard and talked about.

BREAKTHROUGH	LIKELIHOOD
a. Downloading skills into directly the brain (Matrix style)	Never
b. Cars that can fly though the air.	Not in my lifetime
c. Backpack jets that enable individuals to fly.	By the end of the century
d. A cure for all diseases.	No time soon
e. Time travel	Within the next fifty years
f. Colonies on other planets	Before the decade's out
g. Life spans extended beyond 200 years old	One day
h. Artificial intelligence	I'll live to see it
i. Cloning to bring back dinosaurs	
j. World's energy needs provided by air and water	

PRE-READING IDEAS

WORD SEARCH: Look in your dictionaries / computer to find collocates, other meanings, information, synonyms … of the words 'science' and 'fiction'.

TRUE / FALSE: Look at the article's headline and guess whether these sentences are true or false:

a. Scientists have successfully put human beings into hibernation. T / F
b. One day, astronauts could be put to sleep for long voyages into space. T / F
c. Humans may have a latent ability to hibernate. T / F
d. Hospital patients will be able to buy time using their credit cards. T / F
e. The heartbeat in test mice dropped to below ten beats per minute. T / F
f. The body temperature in test mice dropped to below freezing. T / F
g. When our metabolism slows down, we need more oxygen. T / F
h. There are many side effects involved with enforced hibernation. T / F

SYNONYM MATCH: Match the following synonyms from the article:

(a)	type	controlling
(b)	trauma	form
(c)	latent	stopped
(d)	harnessing	adverse
(e)	clinical	dormant
(f)	laced with	shock
(g)	respiration	medical
(h)	at a standstill	breathing
(i)	cardiac arrest	mixed with
(j)	side	heart attack

PHRASE MATCH: Match the following phrases from the article (sometimes more than one combination is possible):

(a)	suspended	to sleep
(b)	the treatment of	laced with hydrogen sulfide
(c)	put astronauts	benefits
(d)	latent	to a crawl
(e)	clinical	animation
(f)	a mixture of oxygen	transplants
(g)	almost at	ability
(h)	cellular activity slows	trauma and disease
(i)	patients awaiting organ	metabolic rates
(j)	normal bodily functions and	a standstill

QUIZ READ: Test your general knowledge and common sense. Circle which word you think is correct from the words in bold:

Hibernation on demand

BNE: Scientists in America have succeeded in placing **mice / wolves** into a type of suspended animation, or enforced **vacation / hibernation**. They used a technique that could one day improve the treatment of trauma and disease in humans or even put astronauts to sleep for long voyages to other **suburbs / planets**. Mark Roth, researcher at the Fred Hutchison Cancer Research Center, says this is not science fiction fantasy: "We think this may be a latent ability that all **mammals / reptiles** have—potentially even humans—and we're just harnessing it and turning it on and off, inducing a state of hibernation on demand." He predicts the technique will revolutionize **medical / literary** practice: "there will be clinical benefits and it will change the way medicine is practiced, because we will, in short, be able to **sell / buy** patients time."

The mice were exposed to a mixture of oxygen laced with hydrogen sulfide, a gas responsible for controlling our **metabolism / digestion**. Respiration in the rodents dropped from 120 breaths per minute to **fewer / more** than ten and body temperature dropped to as low as eleven degrees **Fahrenheit / Centigrade**. With metabolism almost at a standstill, cellular activity slows to a **sprint / crawl** and the body requires minimal oxygen. The resultant hibernation-like state, if successful in humans, could be used for patients awaiting **organ / piano** transplants, the treatment of severe blood loss, cardiac arrest, and in cancer care. Exposure to fresh air returned the mice's **abnormal / normal** bodily functions and metabolic rates with no side effects. Clinical trials with humans could start within five years.

HOMEWORK

1. VOCABULARY EXTENSION: Choose several of the words from the text. Use a dictionary or Google's search field (or another search engine) to build up more associations / collocations of each word.

2. INTERNET: Search the Internet and find information on suspended animation. Share your findings with your class next lesson.

3. HIBER-SALON: It is the year 2030. You are the owner of a hibernation salon – the latest fashion. Write an advertisement outlining the services and benefits of your hiber-salon. Try to "sell" your salon in your next class.

4. 2100: Write an article about how technology in the year 2100 will make our daily lives different from today. Compare your ideas with your classmates in your next lesson.

DISCUSSION:

a. Did you like reading this article?
b. Was there anything in the article that excited you?
c. What do you think of the research mentioned in the article?
d. Do you like science fiction?
e. Do you think science fiction always becomes science fact?
f. What do you think of being able to hibernate?
g. Would you like to hibernate for the weekend or the winter?
h. Would you like to be put to sleep and go on a long space voyage?
i. What do you think when scientists unveil yet another miracle study?
j. Do you think hibernation for humans is dangerous?
k. What animals do you know of that hibernate?
l. In which other ways do you think we may one day be able to copy animals?
m. Are you interested in medicine and scientific research?
n. Would you volunteer to undergo clinical testing in the hibernation project?
o. What do you think medicine will be like fifty years from now?
p. How might hibernation be useful in our lives?
q. Are there any medical or technological developments you are excited about?
r. Would you like to be a scientist?
s. Did you like this discussion?
t. Teacher / Student additional questions.

TEXT:

Hibernation on demand

BNE: Scientists in America have succeeded in placing **mice** into a type of suspended animation, or enforced **hibernation**. They used a technique that could one day improve the treatment of trauma and disease in humans or even put astronauts to sleep for long voyages to other **planets**. Mark Roth, researcher at the Fred Hutchison Cancer Research Center, says this is not science fiction fantasy: "We think this may be a latent ability that all **mammals** have—potentially even humans—and we're just harnessing it and turning it on and off, inducing a state of hibernation on demand." He predicts the technique will revolutionize **medical** practice: "there will be clinical benefits and it will change the way medicine is practiced, because we will, in short, be able to **buy** patients time."

The mice were exposed to a mixture of oxygen laced with hydrogen sulfide, a gas responsible for controlling our **metabolism**. Respiration in the rodents dropped from 120 breaths per minute to **fewer** than ten and body temperature dropped to as low as eleven degrees **Centigrade**. With metabolism almost at a standstill, cellular activity slows to a **crawl** and the body requires minimal oxygen. The resultant hibernation-like state, if successful in humans, could be used for patients awaiting **organ** transplants, the treatment of severe blood loss, cardiac arrest, and in cancer care. Exposure to fresh air returned the mice's **normal** bodily functions and metabolic rates with no side effects. Clinical trials with humans could start within five years.