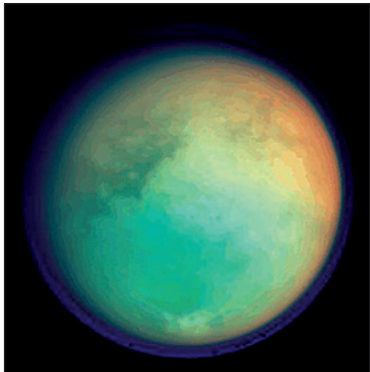




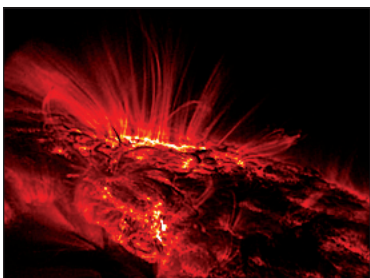
SCIENCE BRIEFS



Best images of Titan yet

New images and data from the Cassini-Huygens space probe have given us the clearest picture yet of Saturn's moon Titan. Astronomers say the moon is much more "active" than they had originally thought. The surface appears to be very windy, and the moon may even harbour huge lakes—not of water, but of methane. On the warmer Earth, methane exists as a gas, and is one of the prime culprits involved in global warming. But on cold Titan, far away from the sun, methane distils into a liquid. There does, however, appear to be some water on Titan—scientists think its core is made of ice. Scientists are particularly interested in Titan because its chemical makeup may resemble that of the Earth four billion years ago. The image above is not Titan as it actually appears, but what it looks like in UV and infrared light. Titan normally appears orange, the colour of its smoggy atmosphere.

—ZOE CORMIER
Source: *Nature*



Sun at height of activity

After piecing together a record of the sun's activity for the last 11,000 years, astronomers think that the sun has been more active during the past 70 years than it was for the previous 8,000. This finding may complicate our current understanding of what exactly is causing global warming. Most scientists believe that the release of carbon dioxide into the atmosphere, mostly from the burning of fossil fuels, is to blame. But there is some evidence to suggest that the activity of the sun can also affect the temperature of the Earth. Between 1650 and 1700 astronomers recorded that the sun was very inactive. This coincides with the coldest period of a time now known as the Little Ice Age, when the entire Earth was much cooler than average. It appears that the sun cycles in its activity, having been just as active 8,000 years ago as it is today. Some astronomers believe that the sun will progressively decrease in activity over the next few decades.

—Z.C.
Source: *Nature*

Researchers grow new eye tissue with stem cells

by ZOE CORMIER
SCIENCE EDITOR

Biologists at U of T have found a way to grow eye tissue using human stem cells.

Researchers from U of T, Switzerland, and the U.S. transplanted stem cells from adult human eyes into young mouse embryos that had had some of their eye tissue removed. Stem cells are like "blank cells"; they have, to a degree, the ability to grow into almost any kind of tissue. Contrary to popular belief, stem cells are found in both embryos and in adult animals.

When put in the eyes of mice embryos, the human stem cells proliferated and developed properly, forming the different kinds of cells that line the back of the eye and allow us to see: photoreceptor cells, that catch light, and retinal pigment epithelial

(RPE) cells, which supply nutrients to the photoreceptors and ensure their proper functioning. The stem cells formed the right kinds of cells in the right places, resulting in healthy eyes indistinguishable from normal mouse eyes.

"The stem cells are making the cell types that we'd desperately like to make for clinical applications," said Brenda Coles, lead author of the study. Researchers are hoping eventually to use stem cells to treat eye diseases that involve the death or degeneration of photoreceptor cells and RPE cells.

Degenerative eye diseases usually occur later in life, and involve the slow gradual loss of vision, often resulting in total blindness. An estimated 1.5 million people worldwide suffer from degenerative eye diseases.

"Right now there's very little out there that can truly help people that are progressively going blind," said

Coles.

Coles notes that while it may be ten years before we see any clinical applications from this study, the prospects of growing new eye tissue in humans appear good. "[Eye] stem cells behave the same in mice and in humans, which is great because it means anything we can do in mice for the most part is going to be directly transferable to humans," said Coles. Stem cells found in the brain, on the other hand, don't act the same in mice and humans. This might slow the progress of research because any discoveries researchers make in lab animals might not work in humans.

Coles and her colleagues, however, still have more work to do on regenerating eye tissue in mice before they can be confident in the usefulness of their work. This study was performed on healthy mice that would otherwise have still grown normal eyes. The goal

now is to treat unhealthy eyes. The stem cells might grow properly if they are put into a diseased eye.

Researchers are also hoping to find a way to use stem cells that come from patients themselves. Not only would this extinguish a lot of ethical concerns, but it would also be a great deal easier on the patients if stem cells from their own eyes could be enticed to grow properly. "We're trying to go at this from a couple of different angles," said Coles.

When asked if this treatment could be used to help people who were born blind, her reply was not optimistic: "Probably not." In addition to having normal eyes, humans also need to have properly formed nerve connections between the eyes and brain. People who were born blind never had these connections form properly as a fetus, so as of now there is not much hope of restoring their sight.

Last total lunar eclipse until 2007 obscured by clouds



KARADILLON

Thick cloudcover blocked out the total lunar eclipse this Wednesday, but students on the Burton Tower at McLennan Physical Laboratories were still able to enjoy this view of Spadina Crescent and the Annex.

by RAHUL CHANDRA

The last total lunar eclipse for the next two and a half years took place this Wednesday, so if you missed it you won't get another chance until March 2007.

Lunar eclipses happen when the Earth comes in between the sun and the moon, causing the Sun to

cast the Earth's shadow onto the moon. It is one of the most dramatic astronomical events visible with the naked eye from Earth. The Astronomy and Space Exploration Society (ASX) organized a series of events to commemorate the occasion.

The ASX is a relatively new organization, comprised of students

enthusiastic about all things astronomical. To celebrate the total lunar eclipse they set up two lectures on the subject of the moon, and arranged for everyone in attendance to observe the celestial event using small telescopes provided by the Department of Astronomy and Astrophysics. Mubdi Rahman, an ASX member and an

undergraduate specializing in astronomy and physics, gave one of the lectures. He spoke on the phases of the moon and explained why eclipses happen.

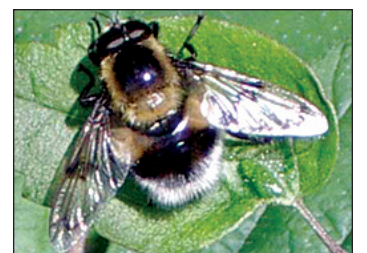
Unfortunately, the clouds were too thick to actually see the moon, so the ASX could only familiarize the spectators with the telescopes and other equipment.



Flies like a bee but still stings like a fly

In the cutthroat world of natural selection, if evolution hasn't been so generous as to give you venomous fangs or piercing stingers, sometimes the best strategy is to fake it. Many harmless animals have evolved to look and act just like dan-

gerous ones so that predators will avoid them. The insect pictured here is not a bumblebee, but a fly that has evolved to look like one. To complete the illusion the fly will visit flowers like a bee gathering pollen (without ever making honey), and will even beat its wings at the same frequency as a bumblebee.



Truth is Stranger Than Fiction