

# INNOVATIVE

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## Astronauts Not Included

With the shuttle program retired, NASA is turning to Virgin Galactic to hitch rides to the edge of space.

Richard Branson's private venture, which aims to be the first commercial space carrier, said it has signed a deal to give the agency up to three charter flights on SpaceShipTwo. The contract could be worth as much as \$4.5 million.

The space plane, whose assembly hangar at the Mojave Air and Space Port was unveiled October of 2011, will carry at least one science mission with a flight test engineer to monitor experiments.

"Each mission allows for up to 1,300 pounds of scientific experiments, which could enable up to 600 experimental payloads per flight," the company said in a release.

"Providing access to space to researchers and their experiments is viewed by Virgin Galactic as both a future mission segment and a significant business opportunity."

Based on the Ansari X Prize-winning SpaceShipOne, SpaceShipTwo is 60 feet long and can carry six passengers and two pilots.

It's designed to launch from a mothership, WhiteKnightTwo, at around 50,000 feet and ascend to the edge of space, some 60 miles above Earth, powered by a hybrid rocket motor.

Passengers, who could start riding the space plane as early as next year, will experience weightlessness and view the curvature of our planet.

Virgin Galactic is selling tickets for a cool \$200,000, and says it has more than 450 bookings.



## Tech Tip Of The Month - Get the Most out of iTunes

### TuneUp

I don't know about you, but my iTunes library has way too many songs called "Track 01" or "Track 02." That's because when you rip songs from a CD, the album info and art are sometimes lost. That also can happen when you buy music from a site other than iTunes. A handy utility called [TuneUp](#) can correct that.

TuneUp launches itself when iTunes does, and shows up as a vertical window alongside it. TuneUp does a number of things, but cleaning up the library is what makes it worth having. If you download the free version, TuneUp will fix up to 100 tracks and retrieve the album art for 50 songs. A full version of the program costs \$30; a one-year subscription goes for \$20.

### iTunes Export

Anyone can buy a CD or a gift card on iTunes. But there's nothing like making a compilation tailored for someone you care about. Sadly, iTunes doesn't make this easy. It's awkward to export playlists you've constructed. [iTunes Export](#) makes it easy to grab a playlist you've built in iTunes and copy it and the songs themselves to a USB drive.

iTunes Export will copy playlists in formats that players other than iTunes can read as well. It's free. And it's very easy, as long as you download the GUI version. When you configure it, be sure that it's looking at the iTunes XML file that's on the same drive as the music itself. Otherwise

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### Inside the Technology Advisor

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### Solar-powered wireless charging table

How nice would it be to just dump all your stuff from your pockets onto your table at home after a long day at work and wake up the next day to your devices fully charged? In the future, we might just be able to.

Panasonic recently showed off a prototype table that lets you charge your phone or any device with a Qi battery by placing it on the table. There are many induction-based chargers available on the market, but what makes this table different from those is that it gets the energy by using solar panels.

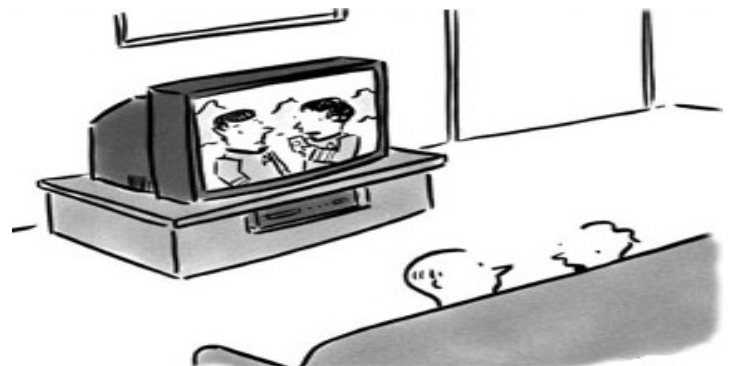
This table's charging panel connects straight to

the battery. You don't need to plug the battery into your phone to charge it – just leave it on the table.

No word yet on how long it'll take to charge your devices, or how long it'll take to store energy. We expect to find these tables in coffee shops, where people can have a cup of coffee while waiting for their digital devices to charge.



"Oh, that's my iPod"



"If this is the future, how come their phones can't take pictures?"

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you'll export the playlist, but not the songs.

#### Songbird

[Songbird](#) is a cross between a browser and a music player that's fun to use and adds value to iTunes.

During installation it'll ask if you want to load your iTunes music directory or another media directory, or perform the task later. It loaded my library quickly and accurately. Playlists take an extra step. Create a new playlist in Songbird, highlight the songs in your iTunes playlist and drag them over. The Songbird interface is cleaner than iTunes and quite easy to manage.

Songbird also supports CD ripping; like other services it will notify you when artists in your library are performing in your city and it will track their new releases. Since Songbird is built on open source, it's easy for developers to come up with add-ons and extensions, and there are lots of them.

#### iTunes Sync

Want to give music to a friend whose MP3 player was not made by Apple? [iTunes Sync](#) will let you

synchronize your playlists with almost any MP3 player that shows up as a drive letter in Windows when you attach it via a USB port. (Microsoft's Zune is an exception.) You can configure as many different MP3 players as you need and synchronize each one with a different iTunes playlist. Be sure to back up the target MP3 player before you use this program for the first time because things can go wrong any time you sync a device for the first time.

#### iTunes U

iTunes U is so useful, and unfortunately, not widely known. Apple and dozens of major universities have collaborated to make huge amounts of course-related audio content available for free via iTunes. Simply launch iTunes, go to the store, and search for "iTunes U." When it comes up, you'll find podcasts from many universities, and resources geared to lower grades as well. The university content is astonishingly rich. Go to Stanford on iTunes, for instance, and see offerings like Global Geopolitics, which includes ten lecturers, or a seven-lecture mini-course called The Future of Human Health. Easy and free education.

### **Don't Let Your Love for Music Ruin Your Ears**

Zero decibels (dB) is where sound begins, like hearing a mosquito 10 feet away. A pin drop comes in around 15 dB. Conversations rate around 60dB, an airplane taking off around 120 dB, a nearby subway car or gas mower around 100 dB and music on digital devices from 88 to 115 dB. 120 is the danger zone. A jet's sonic boom, for instance, produces around 212 dB. 89 dB is the number considered safe for listening to music.

#### **Studies of Music Player Users**

According to one European study, [hearing loss](#) comes from a combination of loud and long. If you like to listen to music at a high volume and do so for an hour a day each week, that will affect hearing within five years. These numbers put millions of Europeans who use music players at risk. Another study of New Yorkers who used digital music players found a listening average of 18 hours per week and some up to 70 hours weekly.

#### **Hearing Loss for Musicians**

A study of lifelong musicians showed that they fared better than average as they aged. They still faced a problem detecting quieter and quieter sounds but they were able to hear words against background noise and recognize different sound frequencies, likely due to regular use of their auditory system.

#### **Extra Problem with Earbuds**

Earbuds expose listeners to more sound. Apple's [iPod](#) manual includes a warning to users about the danger of hearing loss. The Royal National Institute for Deaf People in the UK also warned that more than two-thirds of young people who use earbuds and personal music players may suffer early hearing damage. Another 2005 and 2006 study of U.S. adolescents aged 12 to 19 showed that one in five had hearing loss, more males than females. Another possible effect of playing music loud for long hours is tinnitus. Doctors specializing in this field say that when hearing loss happens to teens (by the time they reach their mid-20s), the effects are irreversible.

#### **Development in Limiting Volume**

A company named dB Logic has developed a system to limit volume on headphones. The system adjusts loudness when it continually measures over 85 dB. Why limit at 85db? In the USA, OSHA has offered the [guidelines here](#), while the EU has offered various guidelines that are

very well summarized [on this site](#), entitled "[personal music players and hearing](#)". On the basis of these guidelines as well as advice generally stated by audiologists, dBLogic has chosen to provide limiting at 85dB SPL.

The issue of sound pressure level limiting (SPL) in general, and limiting to reduce the chance of long-term hearing damage in particular, is relatively new. SPL2, a tiny circuit that operates in between the music player and the headphone earpiece. SPL2 is the only no-battery, no-distortion SPL limiting technology on the market today. SPL2 regulates the volume while still maintaining high-quality sound.

There are 3 different products that dB Logic carries: Earphones, headphones, and an adapter for those who are already attached to their current ear/headphones. The earphones are also called in-ear monitors. These in-ear monitors are widely recommended over normal earbuds that sit inside the outer ear for several reasons. The main reason being that these earphones create a tight seal in your ear canal blocking out the ambient noise around you. You no longer need to turn you music up as loud because there is no other noise interrupting the flow of sound into your ear. This style of earphone encourages healthier listening levels. These earphones run \$35.

The headphones have a super-flexible design and crystal-clear sound. Their adjustable headband, swiveling phones and cushioned ear cups comfortably fit any head size. And using proprietary SPL2 Technology, they're volume-limiting headphones that carry bass-rich, distortion-free sound. dBLogic headphones are compatible with all MP3, portable DVD and other media players, and laptops and aircraft entertainment systems playing MP3 and other audio files—for audiophiles expecting only smart sound quality. Also for your convenience, they're lightweight and compact, work without batteries and come with a handy carrying case all for \$50.

The adaptor is a battery-free, setting-free, and adjustment-free device that is used with your favorite earbuds. Just connect SPL2 Adapter to your earbuds and MP3 player. The adapter is designed specifically to work with Apple® ear buds. It reportedly sells for \$20, but looks like it is unavailable at this time.

Bottom line is this, if you love music and want to continue enjoying it - take care of your ears.

### **Gamers Crack AIDS Enzyme Puzzle**

Online gamers have achieved a feat beyond the realm of Second Life or Dungeons and Dragons: they have deciphered the structure of an enzyme of an AIDS-like virus that had thwarted scientists for a decade.

The exploit is published in the journal *Nature Structural & Molecular Biology*, where both gamers and researchers are honored as co-authors.

Their target was a monomeric protease enzyme, a cutting agent in the complex molecular tailoring of retroviruses, a family that includes HIV.

Figuring out the structure of proteins is vital for understanding the causes of many diseases and developing drugs to block them.

But a microscope gives only a flat image of what to the outsider looks like a plate of one-dimensional crunched-up spaghetti. Pharmacologists need a 3-D picture that "unfolds" the molecule and rotates it in order to reveal potential targets for drugs.

This is where Foldit comes in. Developed in 2008 by the University of Washington, it is a fun-for-purpose video game in which gamers, divided into competing groups, compete to unfold chains of amino acids - the building blocks of proteins - using a set of online tools.

To the astonishment of the scientists, the gamers produced an accurate model of the enzyme in just three weeks.

Cracking the enzyme "provides new insights for the design of antiretroviral drugs," says the study, referring to the lifeline medication against the human immunodeficiency virus (HIV).

It is believed to be the first time that gamers have resolved a long-standing scientific problem.

"We wanted to see if human intuition could succeed where automated methods had failed," Firas Khatib of the university's biochemistry lab said in a press release. "The ingenuity of game players is a formidable force that, if properly directed, can be used to solve a wide range of scientific problems."

One of Foldit's creators, Seth Cooper, explained why gamers had succeeded where computers had failed. "People have spatial reasoning skills, something computers are not yet good at," he said. "Games provide a framework for bringing together the strengths of computers and humans. The results show that gaming, science and computation can be combined to make advances that were not possible before."

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### **Women have stronger immune systems than men and it's all down to a single chromosome**

As anyone familiar with the phrase 'man-flu' will know women consider themselves to be the more robust side of the species when it comes to health and illness. Now new research, published in *BioEssays*, seems to support the idea. The research focuses on the role of MicroRNAs encoded on the X chromosome to explain why women have stronger immune systems to men and are less likely to develop cancer.

The research, led by Dr Claude Libert from Ghent University in Belgium, focused on MicroRNA, tiny strands of ribonucleic acid which alongside DNA and proteins, make up the three major macromolecules that are essential for all known forms of life.

"Statistics show that in humans, as with other mammals, females live longer than males and are more able to fight off shock episodes from sepsis, infection or trauma," said Libert. "We believe this is due to the X chromosome which in humans contains 10% of all microRNAs detected so far in the genome. The roles of many remain unknown,

but several X chromosome-located strands of microRNA have important functions in immunity and cancer."

"We believe this immunological advantage is due to the silencing of X-linked genes by these microRNAs," said Libert. "Gene silencing and inactivation skewing are known mechanisms which affect X-linked genes and may influence X-linked microRNAs in the same way."

This genetic silencing leaves males at an immunological disadvantage as a male has only one X-chromosome. The Y-Chromosome contains fewer genes so if the genes involved in immunity are silenced maternally the male is left with no compensating genetic information.

"How this unique form of genetic inheritance influences X-chromosome linked microRNAs will be a challenge for researchers for years to come," concluded Libert, "not only from an evolutionary point of view, but also for scientists investigating the causes and cures of disease."



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### **Increase your iPod's Battery Life with these easy steps.**

1. Heat will degrade your battery's performance the most. Keep it out of the sun, glove box, and constrictive carrying cases when charging.
2. Use iPod Regularly - For proper maintenance of a lithium-based battery, it's important to keep the electrons in it moving occasionally.
3. Charge Cycles - A properly maintained iPod battery is designed to retain up to 80% of its original capacity at 400 full charge and discharge cycles.
4. Hold and Pause - It may seem obvious, but set the Hold switch when you aren't using your iPod. If you are not listening to iPod, pause it, or turn it off by pressing the play button for two seconds.

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