

# WINE NEWS

## OPINION

# There's more to bees than honey

The Drum By Reese Halter

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***From the Duchess of Cambridge's anti-ageing facials to breakthroughs in nanotechnology, the contribution of the humble bee to society extends far beyond honey, writes Reese Halter.***

This holiday season I'd like to suggest that we all take a couple moments and give gratitude to the world's 1.7 trillion honeybees for giving us our food, cotton, beeswax, honey, and medicines, and for inspiring next-generation innovations.

Honey is a powerful antiseptic and renowned for its antibacterial properties. That's why some modern bandage companies line their products with diluted traces of honey.

Honey is filled with vitamins and minerals including soluble B1, B2, B6, pantothenic and nicotinic acids, vitamin C as well as high amounts of fat-soluble vitamins E, K and A. Honey also provides us with essential minerals: calcium, phosphorus, potassium, iron, copper, manganese, magnesium and sulfur.

Very recently scientists found that honeybees contain reversible DNA chemical-tags on genes, enabling them to immediately respond to their environment. A small number of genes allow a switch from young nurse bees (which stay in the hive to care for young) to older travelling foragers, letting them change back into nurses.

This is an *a priori* - DNA tagging linked to something at the behaviour level of a whole organism; it has huge implications for decoding human health. Once again bees are helping scientists to better comprehend learning, memory, stress response and mood disorders at a genetic and epigenetic level.

Last month, scientists observed honeybees biting parasites but not killing them. It turns out that bee bites contain chemicals that stun pests, making it easier to eject these bloodsuckers from the colony. Scientists believe that these 'stun' chemicals may have an important role in human medicine as an effective anaesthetic - offering an alternative to lidocaine, which some patients are allergic to.

Bees make glue for their hives from tree resin, mixing it with enzymes in their mouths. This pungent bee glue is called propolis. Propolis contains potent antiviral, antifungal, anti-inflammatory, antibacterial and cancer-fighting compounds. Propolis is packed with efficacious secondary plant metabolites that scavenge the human body to rid free radicals, keeping us healthy.

Propovir is a new Australian oral cream made from Canadian propolis; it quickly treats the Herpes simplex virus. Propovir is the only treatment for cold sores that effectively targets all stages of a cold sore from the initial prickle or blisters through to healing the lesions.

In May, scientists found that propolis contained caffeic acid phenethyl ester, an extraordinary compound that stopped the growth of prostate cancer in mice. Propolis is now being tested in clinical trials as a co-treatment in humans.

Honeybees are showing scientists how to live longer from remarkable anti-aging properties of resveratrol, plant compounds found in red grapes. When fed to honeybees, it extended their lifespan by almost 40 per cent. Moreover, resveratrol suppresses appetite. Scientists believe that in order to slow the aging process, restricting caloric intake is of



**PHOTO:** Honeybees have helped to inspire a burgeoning new field in science called biomimicry (dsk3b: ABC Contribute) (dsk3b: ABC Contribute)

paramount importance. Reducing the amount of food consumed increases lifespan and prevents the onset of diseases associated with old age.

Extracts of bee stings - a form of medicine known as apitherapy - have become very popular in bee venom facials used regularly by Catherine, Duchess of Cambridge. These creams take advantage of the anti-inflammatory effects of melittin and adolapin in bee venom along with apamin to improve nerve transmission, which increases circulation and skin tightening of collagen zones. Bee venom facials offer patients an affordable alternative to more costly Botox treatments.

Honeybees have helped to inspire a burgeoning new field in science called biomimicry, which studies nature's models and uses its designs and processes to solve human problems. Biomimicry will create millions of jobs for our youth.

Did you know that one kilogram of bees wax in a hive supports 22 kilograms of honey - more than 20 times its own weight? Many decades ago, the aeronautics industry recognized the strength of six-sided honeycomb and adapted nature's design to enhance the bending and stiffness of aircraft wings, as the wings must support heavy loads of fuel in the aircraft.

Interestingly, bees are showing scientists many lessons readily applicable to existing businesses, as well as inspiring new innovations. For instance, real-world applications from the beehive have been translated to optimise a web-hosting company. Honeybee communication systems have been adopted by programmers to efficiently run internet servers, which must contend with lulls and surges in traffic volume. By using the honeybee hive model, online internet sales rose by as much as 20 per cent while energy consumption fell by 20 per cent.

Hexagonal honeycomb architecture has inspired scientists to develop nano-sized magnets, in a material called spin ice, that is leading to new types of electronic devices with far greater processing capacity than currently exists.

This holiday season please consider supporting local beekeepers. Google your local farmer's market, make it a family day, and buy their honey, beeswax and propolis.

*Earth Dr Reese Halter is a broadcaster, distinguished biologist, and author of eight books, including [The Incomparable Honeybee](#). [View his full profile here](#).*