



## Health Beyond Medicine

This article introduces a creative approach to health management as one of the innovations that shape "The Blue Economy". This article is part of a broad effort to stimulate entrepreneurship, competitiveness and employment. For more information please consult [www.zeri.org](http://www.zeri.org) or [www.blueeconomy.de](http://www.blueeconomy.de).

by Gunter Pauli

### **The Market for Antibiotics**

The world market for antibiotics is expected to grow worldwide from \$26 billion in 2002 to \$40.3 billion by 2015. The growth is expected to be strong, in spite of the fact that the industry has lately been incapable of discovering completely new antibiotics. It is rather a favorable regulatory environment where government insurance programs are prepared to pay more for drugs in the wake of a widespread awareness of antibiotics resistance, and the reemergence of once considered controlled illnesses like tuberculosis. The United States is the largest market in the world for antibiotics where the consumption of this type of prescription drugs has increased fourfold over just one decade.

Antibiotics were first discovered when Alexander Fleming in 1929 by accident learned how penicillin controls bacteria. Fleming never patented penicillin, and offered it open source to the medical community and society. That earned him the Nobel Prize for Medicine in 1945. Surprisingly, the largest growth market for antibiotics today is not for the protection of human health. It is estimated that 50 to 70 percent of antibiotics are delivered to healthy animals to boost their growth by 2 to 3 percent, instead of being administered to sick people. While the European Union recently banned most uses of antibiotics for animals, countries like Denmark pioneered this policy with a ban as early as 2000. After one decade, statistics indicate that bacterial resistance to antibiotics is decreasing.

The number of new antibiotics is extremely low. Just five of the thirteen largest pharmaceutical firms try to discover new antibiotics. Only five new variations of existing antibiotics were approved between 2003 and 2007 by the FDA down from 16 twenty



years earlier. The problem is that antibiotics are only administered one or two weeks to cure a patient, whereas a cancer or a diabetes patient might have to take drugs for life, thus representing a more profitable market. At the same time mutations in *E.coli* have left specific strains of this germ completely invulnerable to nearly all modern antibiotics. About 100,000 Americans now contract illnesses in hospitals each year.

The Methicillin-resistant *Staphylococcus aureus* (MRSA), a mutated bacterial strain now kills more Americans than AIDS. It is clear that technology and the market has failed. As the patent on an antibiotic expires, it is sold as a generic drug at a fraction of the original price, leading to an increased consumption contributing to further mutations and bacterial resistance. At the same time, the expiration of the patent leads to a drop in revenues which implies that the lower returns eliminate the budget for research and development. In the end, the build-up of resistance to that particular antibiotic does not get monitored by the inventor, the former patent holder or the generic drugs manufacturer.

### **The Innovation**

Scientists warn that everyday infections could soon become again a major cause of death. While the notion of subsidizing drug development at a rate of one billion dollars per drug, and guaranteeing coverage to patients seems to be a costly avenue, many wonder how to bridge the gap between the urgency for new antibiotics in society and the low returns - in spite of the massive subsidies - antibiotics' sales through government health schemes provide to drug companies. Experts urge that policies should be introduced on conserving the effectiveness of existing drugs by preventing excessive use in medical care and animal husbandry, while ensuring better infection controls in hospitals. The innovative thinking goes along the line that antibiotics are like biodiversity, it is a natural resource that should be preserved and used with great care.

James Colthurst, a British surgeon and the great grandson of Sir Almroth Wright inventor of the typhoid vaccine, who worked in the same lab as Alexander Fleming, had been studying electrical effects on the body ever since his sister was badly head-injured. Because he was known to be involved in this field, he was approached by a group of USSR scientists working, who were exploring an electrical stimulation concept as a futuristic tool for health care in space travel. He helped to develop their equipment for wider use. Once perestroika occurred, and they chose to market what they had, Dr. Colthurst sought to develop his own ideas of electro-biofeedback. On the back of the work he had undertaken during his Bachelor's of Science degree studying neuro-anatomy at St. Thomas' Hospital in 1978, he designed the Fenzian hypothesis.

This hypothesis is based on the fact that the nerves arise from the same embryonic layer as the skin – the neuroectoderm. A network of nerves, both central, the central nervous system (CNS) comprising the brain, the spinal cord and the peripheral nervous system (PNS), collect, integrate and disseminate information around the body via electrical impulses. These impulses are converted to chemical messengers guiding cell



activity. The electric stimulation through a simple device meeting all European Union and United States FDA regulations is akin to nerve impulses shaping a biofeedback process through simple contact with the skin engaging in a dialogue with the CNS. Soon, Dr. Colthurst and his team could gather anecdotal evidence ranging from treating asthma to wound healing, recovery from Bell's palsy (loss of control of the muscle movements in the face), to treating Crohn's disease and Systemic Lupus. The case whereby pharmaceuticals and surgery could be replaced by no drugs or operation is one of the characteristics of The Blue Economy simplified under the concept "replace something with nothing".

### **First Cash Flow**

Following a retrospective audit of 600 patients which was published in the Pain Clinic (The Pain Clinic, 2007 Vol. 19 No. 1) an initial pilot study on the use of electrical stimulation based on the Fenzian in asthma was published in a letter in the European Respiratory Journal in 2009 (Vol. 34 No. 2 pages 515-517). This showed proof of concept of a novel treatment without relying on pharmaceuticals. Whereas the scientists agree that the exact mechanism remains unknown they agreed that biofeedback could induce changes through the CNS. This led to the set up of clinical trials in six medical centers including UCLA, Johns Hopkins Hospital and the University of Cape Town. At the same time funding has been made available for extended studies at the Manchester Interdisciplinary Biocentre. The scientific and wound research from Manchester continues to deliver extremely positive results. A number of in vitro studies are now needed to underpin the in vivo work in order to prove the scientific pathway. In the meantime Dr. Colthurst created Fenzian Limited, a privately owned UK registered medical research and development company with the support of European investors who have enjoyed different degrees of positive experiences with the Fenzian approach to medicine and health care.

### **The Opportunity**

Governments face multiple challenges. On one hand the greying of the population implies ever increasing costs for health care. Then, governments are facing a growing budget deficit, and subsidization at the rate of billions is increasingly difficult for any government department to approve. Pharmaceutical companies are on the other hand facing an ever higher burden to get new medicine approved, litigation costs are climbing, many drugs are at the end of their patent life, and counterfeit medication is a growing problem, while surgery and an extended stay in a hospital exposes patients to potential infections. The wide spectrum of potential applications of Dr. Colthurst's pioneering approach with the Fenzian technology provides a fresh look that frees pharmaceutical enterprises to focus on a pharmacological chemistry only. Fenzian cuts the need for subsidies, reduces costs of side-effects and works with the inherent capacity of the body to heal itself. Use what you have, is one of the core principles of The Blue Economy.



For more background on the 100 cases: [www.blueeconomy.de](http://www.blueeconomy.de)

For a brief video on The Blue Economy: <http://www.youtube.com/watch?v=1af08PSlals>

<http://www.fenzian.co.uk/>