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ON THE BORDER

Info & insights from the interface between energy healing & science

April 2016

Welcome to the April 2016 edition of 'On the Border'..

For those of you new to 'On the Border', this is Jayne's monthly Ezine newsletter about the latest information and insights into energy fields, healing and science. Each month I share with you some of the latest research and how it applies to healing, energy work & (daily) life. There is also a 'Freebie' section where you get something for nothing, gratis.

Are you wanting to learn the basics of healing and energy work? There is a **beginners 'Heal! En jezelf ook'** in May-July (**DEADLINE** for registration is **SATURDAY 30th APRIL**). And the last **Self-Healing Circle** before the summer is upon us takes place on 25th April.
Please consult **Jayne's Calendar** below for details and links to the **workshops and trainings** I have planned for the coming few months.

Immune to Addiction?

When neuroscientist George Koob proposed creating a vaccine for addiction 25 years ago, his colleagues thought he was wasting his time. The immune system evolved to prevent infections, not highs from illegal drugs. Prevailing wisdom holds that treating addiction requires months or years of psychotherapy to help addicts change their thought patterns, a difficult process that does not consistently work. But Koob, then at the Scripps Research Institute, wanted addicts to be able to see their doctor for a shot that could keep them from getting high when their motivation to stay clean waned.

His premise was simple. Vaccines against infectious diseases work by priming the body to produce antibodies that stick to the invading pathoge, preventing it from causing illness. Koob, who now directs the National Institute on Alcohol Abuse and Alcoholism, believed that the body could be duped into producing

antibodies to drugs of abuse. The antibodies would biochemically block these drugs from creating a high, thereby eliminating the incentive to use them. Unlike traditional vaccines, howeever, this approach would aim to treat, rather than prevent, drug abuse.

More than two decades after Koob proposed his idea, scientists are finally making headway on affordable vaccines against addictive drugs. A vaccine for cocaine has seen success in early human trials, and one against heroin is making its way toward the clinic. A potential vaccine to combat methamphetamine addiction has shown promise in rodents.

Yet the approach is not without its critics. No addiction vaccine has proved effective in a largescale investigation in people, and the first such vaccine (for nicotine addiction) to be put to that test did not fare well. Because environmental factors are instrumental in perpetuating addiction, many experts argue that the problem is unlikely to succumb to a strictly biochemical attack. Still, for a disease that often stubbornly persists despite available treatments, vaccines could be an important addition to the toolbox.

Scourge of Their Lives

Nearly one in 12 Americans is addicted to illegal drugs, according to the latest data from the Substance Abuse and Mental Health Services Administration. The National Institute on Drug Abuse estimates that abuse of alcohol, tobacco and illicit drugs together cost the economy more than $600 billion a year.

Addictions remain difficult to treat. First a user generally heads to detox, during which addicts abstain from using a drug so that it is eliminated from the body. Patients in detox centers receive around-the-clock support to manage the often intense physical and psychiatric symptoms that accompany this process. After detox, some people spend weeks or months in rehabilitation at a live-in facility; others simply attend weekly outpatient psychotherapy either individually or in groups. They often have to rely on willpower and motivation to try to stay clean. The limits of this do-it-yourself approach to addiction treatment are reflected in abysmally high relapse rates, which range from 40 to 60 percent for cocaine, heroin and methamphetamines.

Most psychotherapies used to treat addiction help an addict reduce and resist his or her cravings by avoiding places and people linked to drug taking—their

triggers—and developing support networks to help them kick the habit. In addition, doctors may prescribe medications such as methadone and buprenorphine for addiction to heroin and other opiates that reduce withdrawal symptoms and cravings and temper the high. But these medications do not completely eliminate cravings, and users may not remember to take them every day. Drugs that combat nicotine addiction are partially effective at best, and no medications exist for dependence on cocaine, methamphetamines or alcohol.
Thus, for many addicts, getting and staying clean seems like an impossible dream….

Sleeping Rats

Koob wanted to help people overcome this frustration by interfering with the biochemistry of drug taking. After a user injects, inhales or ingests a drug, it travels through the bloodstream and crosses the blood-brain barrier, a sheath of cells that lines brain capillaries and protects the brain from many toxic substances and other molecules in the bloodstream. Once inside the brain, molecules of the drug (or its metabolised products) bind to specific targets, setting off a series of chemical events that produce feelings of euphoria. Methadone treats heroin withdrawal and cravings—and can block its high—by acting at opiate receptors much more slowly and mildly than heroin. Koob wanted to intervene sooner, before a drug crossed the blood-brain barrier. So he decided to push the idea of the addiction vaccine.

Like an infectious disease vaccine, an addiction vaccine mobilises the immune system to fight a foreign substance. The vaccine trains the immune system to make antibodies that specifically target the “invader.” These antibodies will then rapidly kill the pathogen or deactivate the drug whenever they encounter it in the bloodstream. Because they act by sticking to a drug molecule, antidrug antibodies have the added benefit of creating a compound that is too big to cross the blood-brain barrier.

For scientists, the goal of the vaccine was to coax the immune system into responding to something that does not ordinarily provoke a reaction. Koob and Scripps medicinal chemist Kim Janda decided to attach the drug molecule—cocaine in this case—to a protein from a virus that does incite an immune reaction. This technique causes the immune system to react to the combination molecule, creating antibodies that will bind to various parts of it. Many of these antibodies will then also attach to a cocaine molecule when it enters the body alone. The vaccine thus prompts a subset of immune cells to build an arsenal against cocaine.

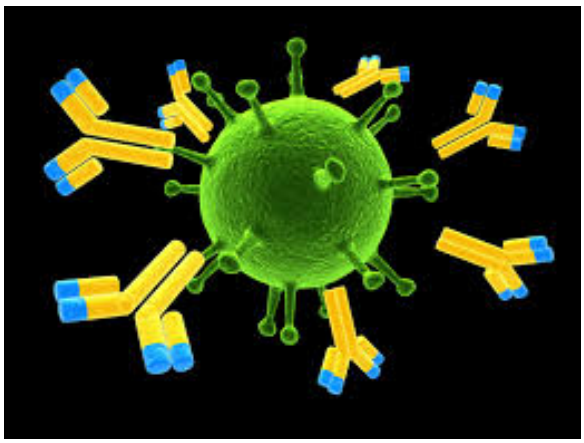
Next Koob, Janda and their colleagues injected their vaccine into rats immediately after the animals were exposed to cocaine. Ordinarily, when get high for the first time on a stimulant such as cocaine, they become hyperactive and restless; they fail to eat and stay awake for extended periods. In

contrast, after these rats took a huge hit of cocaine they were able to fall asleep. The rats had become immune to the effects of cocaine.

Several other laboratories, including that of neuroscientist Thomas Kosten of the Baylor College of Medicine, also developed cocaine vaccines that proved effective in animals. Instead of using a viral protein, Kosten and his colleagues attached cocaine to a toxin produced by the bacterium that causes cholera. In 2002 the researchers gave 24 former cocaine users their vaccine to test its safety and to see whether it would trigger the hoped-for antibody production in people similar to those who might eventually receive the vaccine therapy. Although the treatment proved benign, it failed to produce high levels of antibodies in 25 to 30 percent of patients.

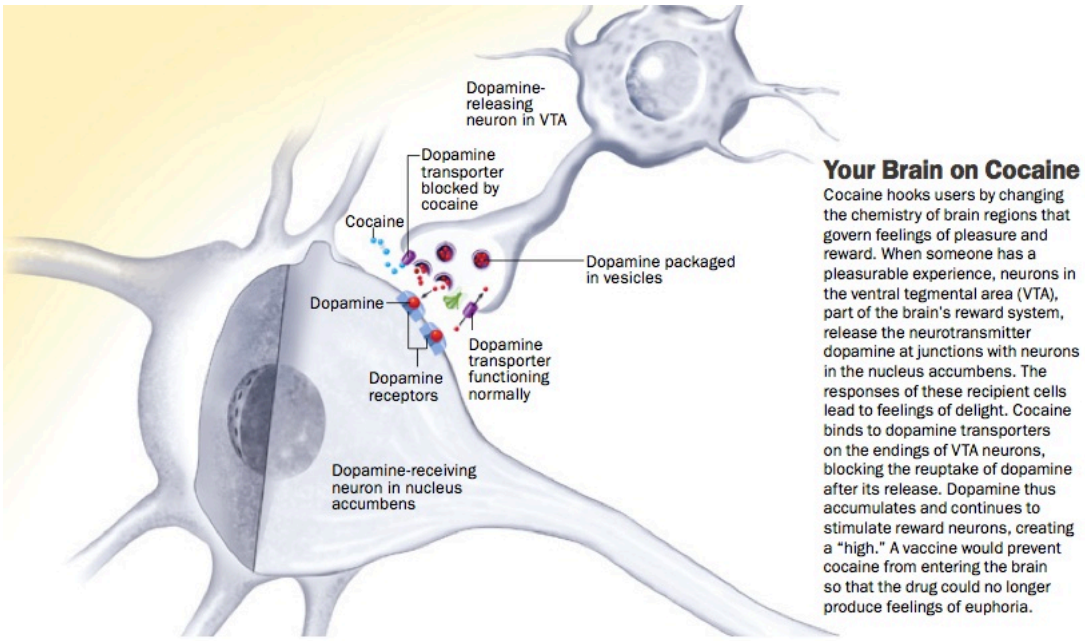
Booster Shots

In a larger follow-up study published in 2009, Kosten's team injected 109 drug users either with the vaccine or with saline—and gave the participants four booster shots over the next 12 weeks to try to raise the percentage of those able to make adequate antibodies. The researchers also tested the addicts' urine three times a week for 24 weeks for cocaine and other drugs and monitored the level of anticocaine antibodies in their bloodstream. Only 38 percent of the vaccine recipients had high levels of those antibodies, yet nearly all produced some antibodies, and as a group they were 22 percent less likely to have a cocaine-positive urine test than were those who received saline injections. In addition, those who produced large amounts of antibodies were significantly more likely to have cut their cocaine usage by half.



Still, Kosten's vaccine left a considerable number of cocaine addicts without adequate antibody protection. It also did not affect their desire to use, which means that they might not come back for booster shots. So Koob and his colleagues kept pursuing their virus-based vaccine and came up with a combination of chemicals that included a new viral protein. In a study published in 2013 Crystal, Koob, Janda and their colleagues injected their latest manipulation of the cocaine molecule into four female rhesus macaques monkeys that had become dependent on cocaine; a fifth received a saline injection.

The macaques that received the vaccine produced very high levels of antibodies to cocaine. When the monkeys were then injected with cocaine, positron-emission tomography (PET) brain scans showed that very little of the drug bound to its molecular target, the dopamine transporter in the brain [see illustration below]. What is more, the animals showed no behavioural signs of a drug high, such as restlessness or insomnia. Koob and Janda are currently planning a preliminary safety trial of their vaccine in humans.



The pair is also now putting the finishing touches to a heroin vaccine. A vaccine for heroin is trickier to make because heroin is rapidly metabolised into morphine and 6-monoacetylmorphine, both of which act on the brain's opioid receptors. An effective vaccine therefore has to spur the production of antibodies against heroin's breakdown products as well as the drug itself. So Koob and Janda made three vaccines in one: they separately attached the virus protein to heroin and its two major metabolites.

In 2013 Koob, Janda and their colleagues tested their compound vaccine in rats addicted to heroin. These animals spent many of their waking hours either searching for or taking heroin, delivered by intravenous infusion whenever the rats pressed a lever. The researchers then removed the heroin and injected half the rats with three doses of vaccine. After 30 days, the vaccinated rats were once again offered heroin. Although the animals tried to get high, they stopped pushing the lever after several minutes, presumably because they were not getting any reward. The rats that had not been vaccinated, in contrast, kept obsessively pressing the lever for heroin.

Whether the vaccine will work in humans is still an open question, however. Human addicts might be more determined than rats to get high, so if a vaccine thwarts that high, instead of giving up, people might wind up taking more of a substance, leading to a massive overdose. In addition, humans have access to other addictive substances. If you have an addict who seriously wants to use drugs and is vaccinated, then the next option could be to use a different drug that the vaccine doesn't act against….

The Other Half of Addiction

Even if vaccines do not produce such rebound effects, many addiction specialists believe the approach is too narrowly focused on biochemistry to be of much benefit in the real world. A complex interplay between individual psychology and environment is at least half the equation of addiction. Maybe the vaccine would

help with the part of addiction that is biological, but what can be done about the other half?

The nicotine vaccine NicVAX, produced by Nabi Biopharmaceuticals, provides a cautionary tale. In large-scale clinical trials conducted from 2009 to 2011, the vaccine (which is nicotine attached to a bacterial antigen) performed no better than placebo in getting people to quit smoking. Koob and other researchers believe, however, that the devil is in the details. They expect other combinations of pathogen proteins and drug molecules—whether nicotine, heroin or cocaine—to fare better.

Koob concedes that vaccines are only part of the solution to the addiction puzzle. "Vaccines aren't going to cure addiction by any stretch," he says. "But they will put up an enormous barrier." If vaccines can help even a fraction of addicts get off drugs, Koob and Janda believe their work will have been worth the effort.

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- **Dynamic Vaccine Blocks Relapse to Compulsive Intake of Heroin.** Joel E. Schlosburg et al. in *Proceedings of the National Academy of Sciences USA,* Vol. 110, No. 22, pages 9036–9041; May 28, 2013.
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- **A Shot at Quitting**. Carrie Arnold in *Scientific American Mind*, Vol. 26, No. 1, pages 43-47; January/February 2015

JAYNE'S CALENDAR

Heal! En jezelf ook

Yes indeedy, this popular course is back for its yearly appearance! For all those who want to get a *feeling for healing*.
DEADLINE for registration is **SATURDAY 30th APRIL**

The dates for you to note in your diaries (all on Sundays, and all in Dutch):

Sunday 29th May
Sunday 12th June
Sunday 26th June
Sunday 10th July

Price: €460, incl. btw and coffee/tea/lekkere dingen/lunch

For more information please see http://www.jaynejubb.com/heal2015.htm
(yes, yes, I know the link says 2015, but it is correct and it does work)

Self-Healing Circles

Start your journey to well-being with a Self-Healing Experience via *The Self-Healing Works* – a Self-Healing Circle in Amsterdam.

Jayne and healer-colleague, Carmen O'Dwyer, offer together a healing space open to the public. Through the experience of our Self-Healing Circle, you will reconnect and activate the inner intelligence of your body, mind and spirit. You also bring well-being to your life in a new, effective way.

The next Self-Healing Circles are planned for:

Monday 25th April 16-17h

Remember that the Self-Healing Circles are not only for times when you have a problem or are ill. They can be used to deepen "good" feelings or to ground the aspects of your life that are working in alignment with your soul's purpose and longing for this life.
You can take part in person or at distance (via Skype).

For all the dates and the full information about our Self-Healing Circles see http://www.theself-healingworks.com

April Freebie

In this section you get the chance to get something for nothing. Helemaal gratis. Always a pleasure!

London Real is a platform for 'people worth watchng'. Think of TEDx but then with a twist. They feature interesting guests with fascinating stories and unique perspectives on life to inspire viewers to make the most of their life.
Well worth siging up for! Surf along to londonrealacademy.com

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