

All about addiction

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Addiction is a brain disease that destroys lives, devastates families and tears at the very fabric of society. Effective prevention and treatment of addiction requires a clear understanding of the complex brain mechanisms that underlie addictive behaviors, and research has provided a fascinating view of how substance abuse hijacks neuronal circuits involved in reward and motivation and causes profound and persistent changes in behavior. Now, a special issue of the journal *Neuron*, published on February 24th by Cell Press, provides new insight into to the most recent advances in addiction research and highlights the complexities associated with the neurobiological and societal impacts of addiction, as well as strategies for the prevention and treatment of substance abuse.

The special issue, made freely available at www.neuron.org through March 31st, contains review articles written by leaders in the field of addiction research that shed light on genetic vulnerability to addiction, the impact of [addictive drugs](#) on neuronal transmission, the effects of addictive drugs on reward, risk and decision making, behavioral and pharmacological treatments for addiction and reward mechanisms in obesity. In addition, a series of more societal-focused NeuroViews highlight issues associated with the use of opiates to treat chronic pain, the abuse of cognitive enhancing drugs and why a medical approach is likely to be far more effective at treating addicts than a punitive criminal approach.

"Substance abuse disorders profoundly affect our society," writes Dr. Nora Volkow, Director of the National Institute on Drug Abuse (NIDA),

in a NeuroView on the societal impacts of addiction. "Though costs are usually translated in economic terms – approximately half a trillion dollars in the USA – their impact is much more insidious, eroding the foundation of human relationships and the established social contract." New insight into the science of addiction may eventually lead to better strategies that empower families and individuals who are living with this chronic, relapsing [brain disease](#) and its associated compulsive and destructive behaviors.

An accompanying Cell Press Podcast features an exclusive interview with Dr. Volkow. Dr. Volkow explains how recent imaging studies have shown that drugs of abuse do not just disrupt reward pathways in the brain, but that deficits actually expand to an area of the brain called the prefrontal cortex. "This was very surprising because the prefrontal cortex, which has been recognized to be crucial for cognitive operations, was never thought to be of any relevance to the process of addiction," says Dr. Volkow. She goes on to explain how this damage to the prefrontal cortex is linked with compulsivity and impulsivity, pathological behaviors intimately intertwined with addiction, and that therapeutic strategies for addiction should be aimed at reversing these critical cognitive deficits.

More information: www.cell.com/neuron

Provided by Cell Press

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