Drugs and the Brain

Henry A. Lester

The neuroscience of drugs for therapy, for prevention, and for recreation. You'll learn the prospects for new generations of medications in psychiatry, aging, and treatment of substance abuse.

**Next Session:**
Dec 1st 2012 (5 weeks long)  
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**About the Course**

What happens in the body when a person smokes a cigarette? After several weeks of smoking? When a person takes medication? A drug for pain or migraine? A recreational drug? Neuroscientists are beginning to understand these processes. You'll learn how they enter the brain, how they act on receptors and ion channels, and how “molecular relay races” lead to changes in the brain that outlast the drugs themselves. “Drugs and the Brain” also describes how scientists are gathering the knowledge required for the next steps in treating or alleviating Parkinson's, Alzheimer's, schizophrenia, and drug abuse.

**About the Instructor(s)**

Henry A. Lester, Ph. D., is Bren Professor and Executive Officer for Neuroscience at the California Institute of Technology, where he has spent his entire teaching career. He has written almost 300 scientific papers and holds seven patents on drugs and the brain, including topics such as nicotine addiction and Parkinson's disease. He served as President of the Biophysical Society and as a member of the Advisory Council of the U. S. National Institute of Mental Health (NIMH). He has conducted research sponsored by the California Tobacco-Related Disease Research Program, the Michael J. Fox Foundation, the McKnight Endowment for Neuroscience, NIMH, and the National Institutes of Drug Abuse, Neurological Diseases and Stroke (NINDS), Aging, Heart and Lung, and General Medical Science. He received the Fuller Award in Neuropharmacology from the American Society for Pharmacology and Experimental Therapeutics, the Cole Award in Membranes from the Biophysical Society, and two NINDS Jacob K. Javits Awards. He received degrees from Harvard and Rockefeller Universities.
Recommended Background

Neuroscience, the most interdisciplinary science of the 21st century, receives inputs from most other scientific disciplines. Some previous exposure will enrich your experience with this course.

Suggested Readings

We will provide appropriate links to molecular biology, genomics, physiology, pharmacology, cell biology, biophysics, neurology, and electrical circuits.

Course Format

The class consists of lecture videos, 8 - 12 minutes in length. These contain 1-2 integrated quiz questions per video. The final exam is part of the course.

FAQ

- **Will I learn enough to prescribe / advise / diagnose / change my friends' medication? My own medication?**
  
The instructor is not an MD and cannot prescribe. Don't change any medication you now receive as a result of this course.

- **Which courses should I plan next?**
  
  “Drugs and the Brain” is the first in a Caltech / Coursera sequence on modern neuroscience.

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