

DRUGS AND THE BRAIN
PSYC62 2005 (Wed and Fri, 9-10 am, SW-143)

Instructor: Prof Suzanne Erb
Office: S-531
Office hours: Wed, Fri 10 am-12 pm
e-mail: psyc62@utsc.utoronto.ca

Teaching Assistant: Vanessa Lopak

Course description

Psychopharmacology is the study of the effects of drugs on behaviour, cognition, and emotion. There are many different classes of drugs that act within the central nervous system to alter behaviour, cognition and emotion. Some have been designed for the treatment of mental disorders such as schizophrenia and depression. Other drugs are known primarily for their social or recreational abuse potential. This course will provide an introduction to basic principles of psychopharmacology with a specific focus on drugs of abuse.

A range of topics pertinent to the study of psychopharmacology will be covered, including behavioural pharmacology and pharmacokinetics, neurobiological mechanisms of drug action, tolerance and dependence, and classification of psychotropic drugs. In addition, several of the major classes of drugs of abuse will be studied and recent research on the behavioural and neurobiological effects of these drugs will be examined.

Textbook

David M. Grilly (2002) *Drugs and Human Behavior, Fourth Edition*. Boston, MA: Allyn & Bacon.

Intranet

All students must obtain a UTSC e-mail account, if they do not already have one. This is required in order to access the course page through the intranet. The intranet will be used for posting of lecture notes, posting of grades, and all important class announcements. Please get your e-mail accounts set up ASAP. To set up your account, go to <https://intranet.utsc.utoronto.ca/home.php?login=1> and click on the link "sign up for student account".

E-mail

If you wish to send me an e-mail message, please use the course e-mail address (psyc62@utsc.utoronto.ca). *I will not respond to e-mail sent to my personal account.*

Evaluation

Evaluation will be based on two term tests (20% each of final grade), a final exam (40% of final grade), and a group assignment (20%). The term tests will be written in class and consist of 25 multiple choice questions each. The tests will be based on lecture material, textbook material that corresponds to topics covered in lecture, and assigned readings. The final exam will be cumulative, consist of multiple choice and short-answer questions, and be based on lecture material and assigned readings. Information on the group assignment is provided in a separate handout.

Assigned readings (see Schedule of Lectures)

Articles are posted on the intranet in pdf format.

Ahmed, S., & Koob, G. (1998). Transition from moderate to excessive drug intake: change in hedonic set point. Science, 282, 298-300.

Deroche-Gamonet V, Belin D, Piazza PV. (2004) Evidence for addiction-like behavior in the rat. Science, 305:1014-7

De Vries, T.J., Shaham, Y., Homberg, J.R., Crombag, H., Schuurman, K., Dieben, J., Vanderschuren, L.J., Schoffemeer, A.N. (2001) A cannabinoid mechanism in relapse to cocaine seeking. Nature Medicine, 7, 1099-1100.

De Vries TJ, Homberg JR, Binnekade R, Raaso H, Schoffemeer AN. (2003) Cannabinoid modulation of the reinforcing and motivational properties of heroin and heroin-associated cues in rats. Psychopharmacology, 168, 164-169.

Vanderschuren LJ, Everitt BJ. (2004) Drug seeking becomes compulsive after prolonged cocaine self-administration. Science, 305, 1017-1019.

Siegel, S. (1976). Morphine analgesic tolerance: Its situation specificity supports a Pavlovian conditioning model. Science, 193, 323-325.

Siegel, S., Hinson, R. E., Krank, M. D., & McCully, J. (1982). Heroin "overdose" death: Contribution of drug-associated environmental cues. Science, 216, 436-437.

Sokolowska, M., Siegel, S., & Kim, J. A. (2002). Intraadministration associations: Conditional hyperalgesia elicited by morphine onset cues. Journal of Experimental Psychology: Animal Behavior Processes, 28, 309-320.

SCHEDULE OF LECTURES

DATE	TOPIC	READINGS
Jan 5	Introduction to course	
Jan 7	Principles of Pharmacology I: Defining drugs; drug-receptor interactions	Ch. 2
Jan 12	Principles of Pharmacology II: Dose-response functions; drug-drug interactions	Ch. 2
Jan 14	Research tutorial	
Jan 19	Pharmacokinetics I: Absorption; Routes of administration; Distribution; Metabolism	Ch. 3
Jan 21	Neuronal conduction	Ch. 4
Jan 26	Neuronal transmission	Ch. 4
Jan 28	Neuroactive Ligands	Ch. 5
Feb 2	TERM TEST 1	Ch. 2-5
Feb 4	Proposal tutorial – Topic A	
Feb 9	Proposal tutorial – Topic B	
Feb 11	Proposal tutorial – Topic C	
Feb 14-18	READING WEEK	
Feb 23	Tolerance and dependence ... and sensitization	Ch. 6
Feb 25	Tolerance and dependence ... and sensitization	Ch. 6
Mar 2	Drug Classification	Ch. 7
Mar 4	Psychostimulants	Ch. 9
Mar 9	Important topics in addiction research: Focus on <i>psychostimulants</i>	Ahmed & Koob, 1998 Vanderschuren et al, 2004
Mar 11	Important topics in addiction research: Focus on <i>psychostimulants</i>	Deroche-Gamonet, 2004
Mar 16	TERM TEST 2	Ch 6-7, 9, and readings

DATE	TOPIC	READINGS
Mar 18	Opioids	Ch. 10
Mar 23	Important topics in addiction research: Focus on <i>opioids</i>	Siegel, 1976; Siegel et al, 1982
Mar 25	GOOD FRIDAY – NO CLASS	
Mar 30	Important topics in addiction research: Focus on <i>opioids</i>	Sokolowska, 2002
Apr 1	Psychotomimetics, psychedelics, and hallucinogens	Ch. 11
Apr 5	Important topics in addiction research: Focus on <i>cannabinoids</i>	De Vries et al, 2001; De Vries et al, 2003