eLearning in Pharmacology

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eLearning platforms.

Department of Pharmacology and Toxicology

Flash + JavaScript

PHP

eLearning platforms.

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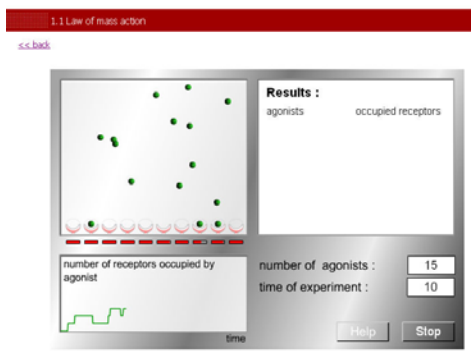
Programming: JavaScript + Flash

Template



Files on server

- flash simulation
- flash simulation
- flash simulation
- flash simulation
- flash simulation

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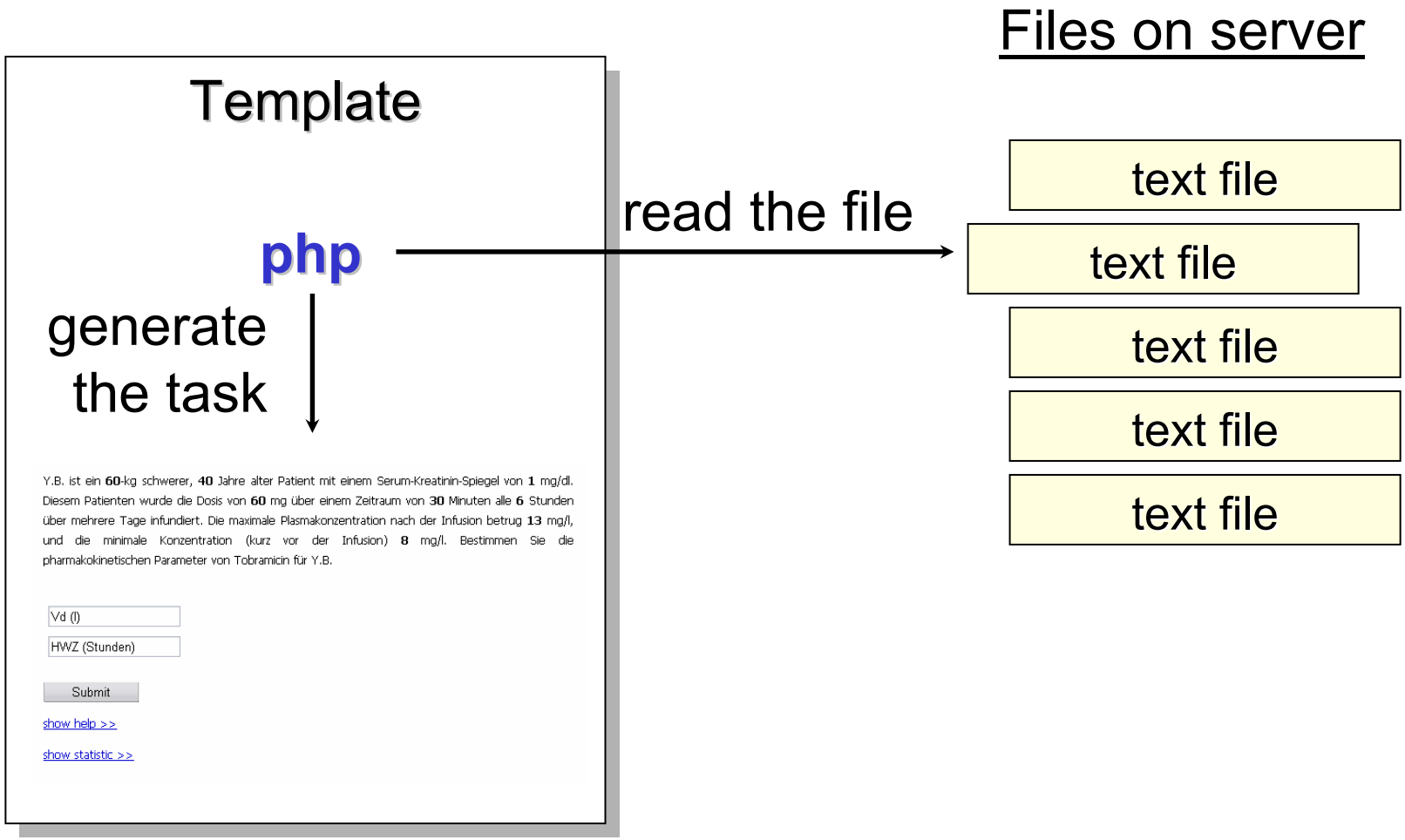
Programming: PHP



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THANK YOU!

http://www.univie.ac.at/ptox/eLearning/main.html

eLearning basics of pharmacology

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[main] [requirements] [deutsche Version]

Welcome to the eLerning platform of the Department of Pharmacology and Toxicology. Our course is part of the teaching program in "General Pharmacology". It illustrates the principles of receptor functon, pharmacokinetics and how ion channels work.

We combine traditional teaching (lectures, tutorials, laboratory classes) with eLearning (illustrations, self-testing and games).

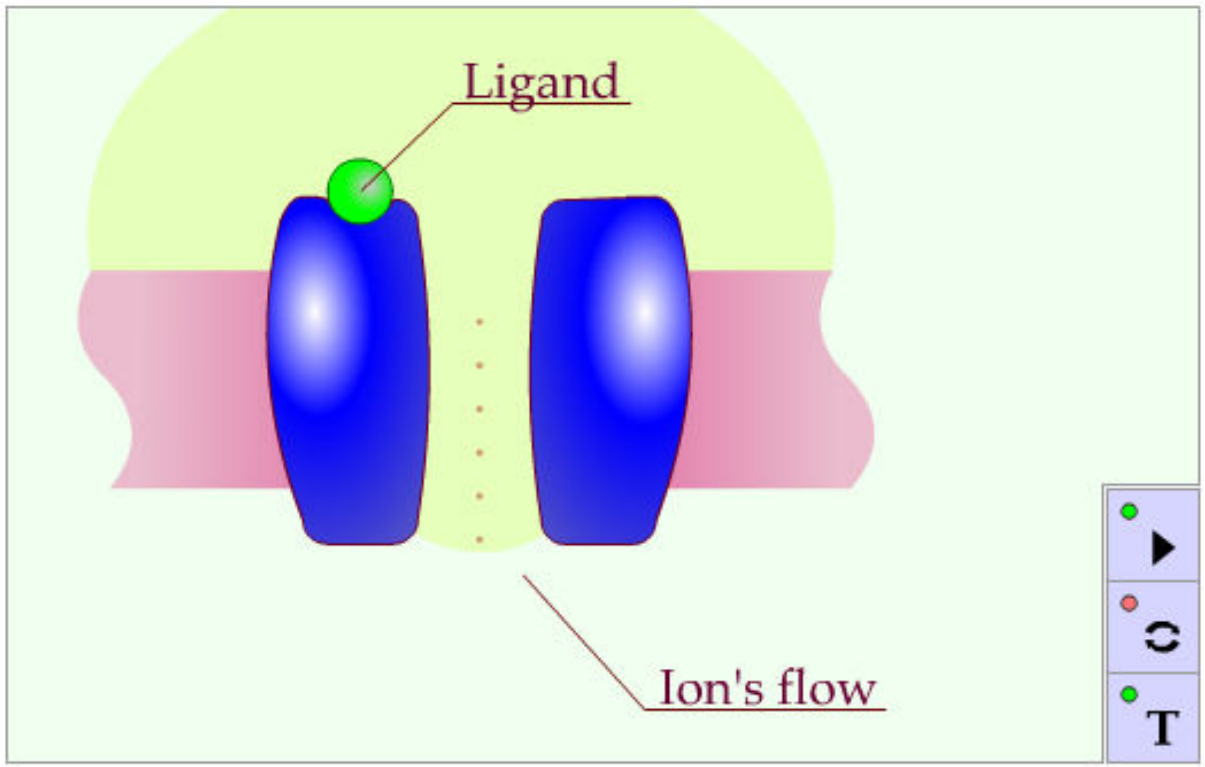
The course was developed by Eugen Timin, Stanislav Beyl (Flash design) and Steffen Hering. Please send us your suggestions.

eLearning platform

1. Pharmacodynamics
   - 1.1 Law of mass action
   - 1.2 Dose response curve
   - 1.3 Dose response curve (task)
   - 1.4 Competetive antagonism
   - 1.5 Competetive antagonism (dose response curves)
   - 1.6 Non-competetive antagonism
   - 1.7 Efficacy
   - 1.8 Full agonist in the presence of partial agonist
   - 1.9 Partial agonist in the presence of full agonist

<< back

Ligand-gated Channel



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1.1 Law of mass action

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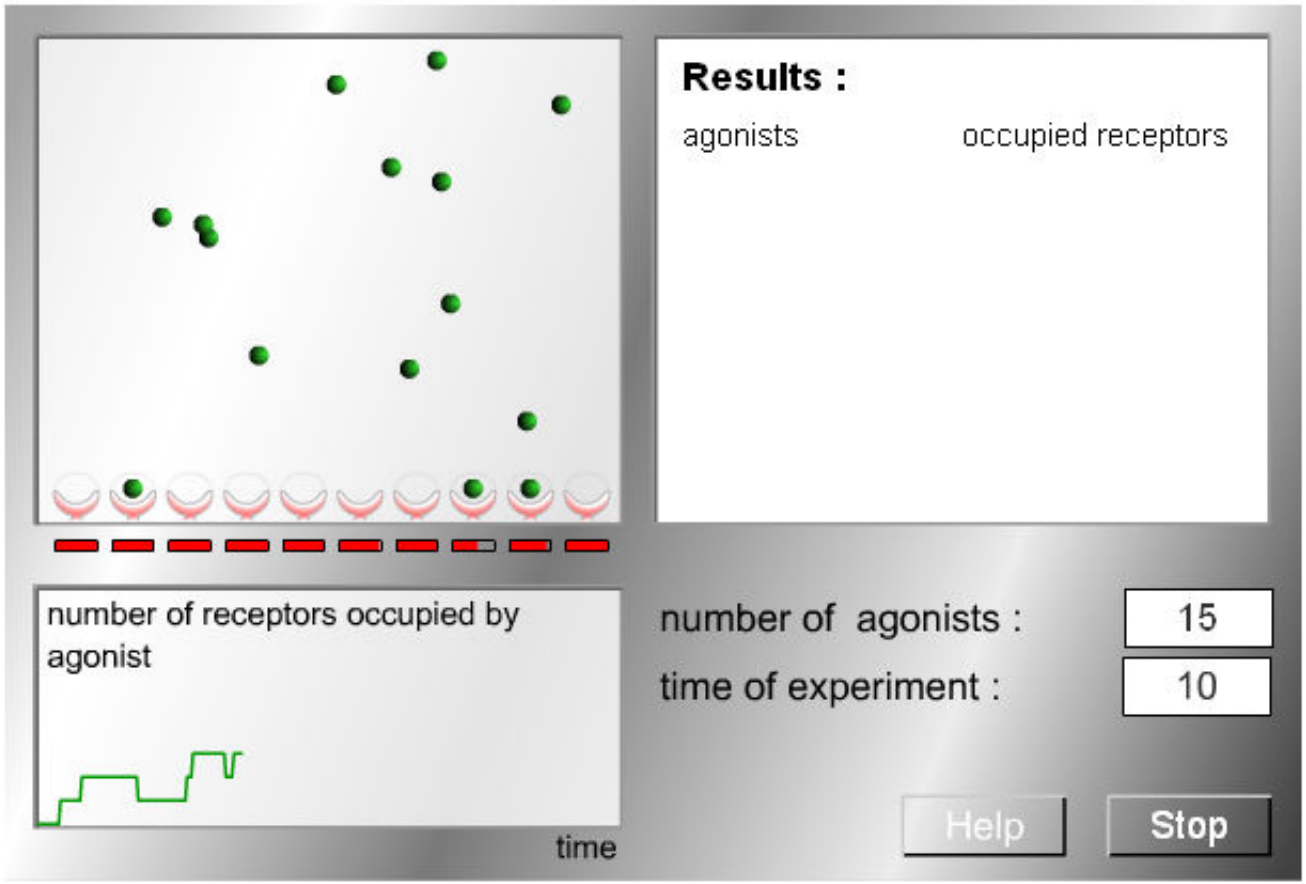

The Law of Mass Actions states that the rate of a chemical reaction is proportional to the concentrations of the reactants. Test this prediction by varying the number of agonists

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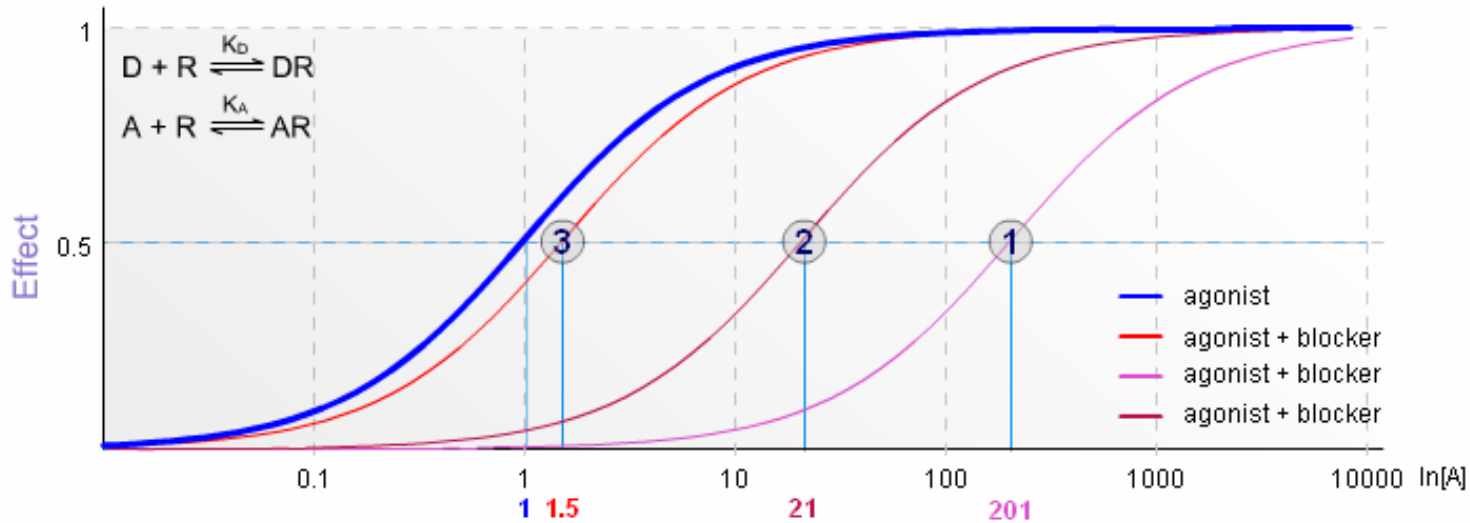

Bestimmen Sie:

K_D des beta-Agonisten	1	µM	√
K_A des beta-Blockers (1)		µM	✗
K_A des beta-Blockers (2)		µM	✗
K_A des beta-Blockers (3)	2	µM	√

Ordnen Sie die beta-Blocker nach ihrer Affinität:

1 > 2 > 3 CORRECT

start check help

Estimate the affinity of ligang and affinities of all three beta blockers.

2.5 Continuous infusion (task)

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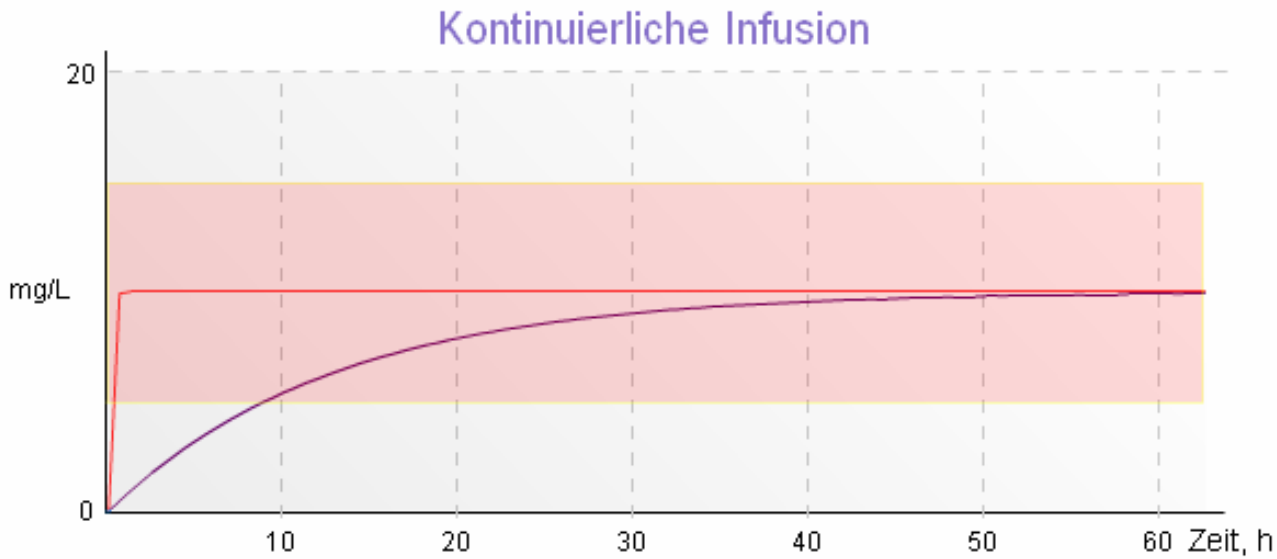


Pharmakon: **Theophylline**

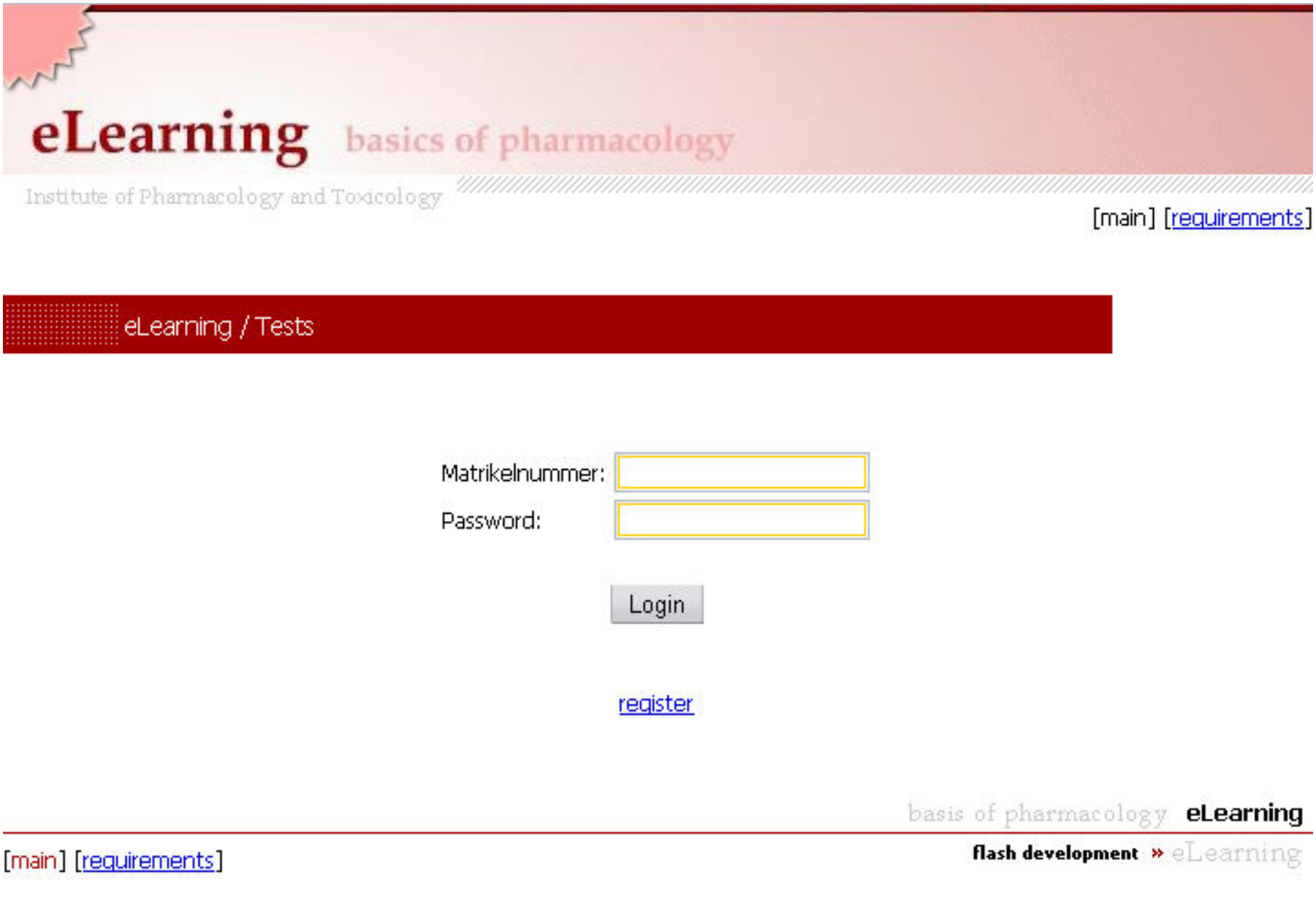
Verteilungsvolumen:	0.5	L/kg			
Clearance:	0.65	ml/min/kg			
Therapeutischer plasmaspiegel:	10	mg/L	Loading Dosis:	?	mg
Körpergewicht:	45	kg	Erhaltungsdosis:	?	mg/h

Start

Überprüfen

It is known, that this patient suffers from a longtime non allergic asthma. He is in bad general- and nutrition condition. You want to meliorate the patients acute aggravation of his asthma pathology and decide to treat him intravenously with Theophyllin.

http://www.univie.ac.at/ptox/php/



eLearning / Tests Matrikelnummer: demo

1. Aminoglycoside Antibiotics
   - 1.1 Plasma Konzentration
   - 1.2 Konzentration im Steady-State
   - 1.3 Pharmakokinetische Parameter
   - 1.4 Dosierungsschema

2. Digoxin (zur Behandlung angeborener Herzfehler, CHF)
   - 2.1 Digoxin loading dose (intravenous)
   - 2.2 Digoxin loading dose (oral)
   - 2.3 Daily maintainance dose
   - 2.4 Digoxin Spiegel
   - 2.5 Aterielle Fibrillation

1.1 Plasma concentration

Matrikelnummer: demo

<< main

P.M. is a **40**-year-old, **80** kg woman with a serum creatinine of **0.5** mg/dl. A gentamicin dose of **120** mg was infused over **30** minutes.
Calculate the plasma concentration **5.5** hour after the infusion was started (i.e. **5** h after the infusion was completed).

(mg/l)

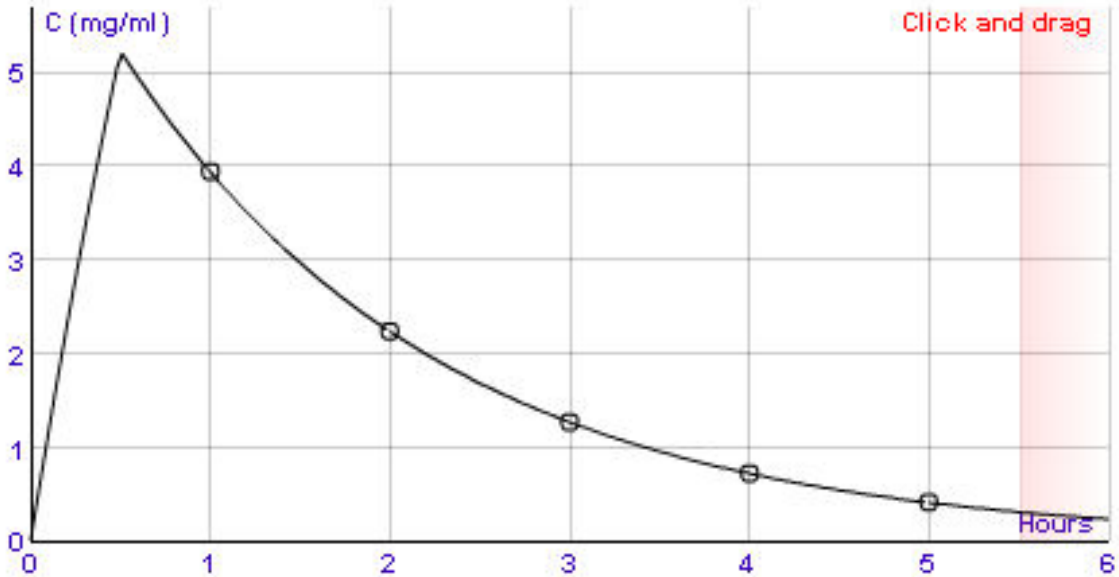
Submit

show help >>

show statistic >>

hide help <<

time: 5.5 h



$Cl_0 = (140 - Age) * Weight * 0.85 / (72 * Cr_{ss})$

$k = Cl_0 / (0.25 * Weight)$

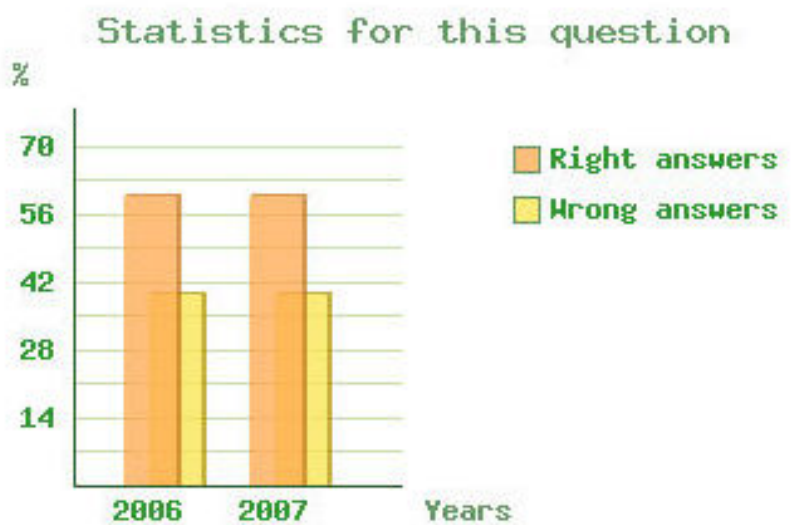
$C(t_{inf}) = C_{ss} * (1 - \exp(-k * t_{inf}))$

$C_{ss} = F / Cl = D / (t_{inf} * Cl)$

$C(T) = C(t_{inf}) * \exp(-k * (T-t_{inf}))$

show statistic >>

hide statistic <<



<< main

eLearning / Tests Matrikelnummer: demo

In this section you can compose your own test (to work offline) or take an exam (online). To do it - select the tasks you want to include in test/exam and press the button "Combine the test" or "Combine the exam" (at the buttom of this page).

1. Aminoglycoside antibiotics

- [ ] 1.1 Plasma concentration
- [ ] 1.2 Concentration at steady-state
- [ ] 1.3 Pharmacokinetic parameters
- [ ] 1.4 Dosing regime

2. Digoxin (to treat Congestive Heart Failure, CHF)

- [ ] 2.1 Digoxin loading dose (intravenous)
- [ ] 2.2 Digoxin loading dose (oral)
- [ ] 2.3 Daily maintainance dose

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Matrikelnummer: demo

Name: demo

1.1 P.M. is a **30**-year-old, **50** kg woman with a serum creatinine of **0.5** mg/dl. A gentamicin dose of **160** mg was infused over **90** minutes.
Calculate the plasma concentration **2.5** hour after the infusion was started (i.e. **1** h after the infusion was completed).

answer: _____ (mg/l)

1.2 P.M. is a **60**-year-old, **70**-kg woman with a serum creatinine of **0.4** mg/dl. She was given **140** mg of Gentamicin over **20** minutes every **10** hours.
Predict her maximal and minimal concentrations at steady-state level.

answer: _____ min (mg/l)

answer: _____ max (mg/l)

Submit and Print