Virtual Physiology Updates: Corrections and Extensions (2015-12-15)

Here are some notes concerning recent updates, corrections and extensions of the Virtual Physiology teaching tools that have been made since our last circular mail. Before going into the details of specific programs (see below), first some general information:

Experimentation via an institute server or at home:

The licenses include the rights to upload the programs on your **Institute server**, provided that the access is restricted to the enrolled students. Additionally, if you wish to let the students download the programs for **work at home**, we will also send you time-limited licenses for the students - just to avoid that students are distributing time-unlimited versions with the name of your Institute. These "student licenses", valid for 13 months, can annually be renewed. If you like to make use of this opportunity, just let us know the date at which the license shall be activated.

Program Corrections and Extensions:

SimNeuron:

Major changes were made in SimNeuron which has been redesigned, specifically with regard on the **Neuron Editor** where you now will find the complete set of equations, including those for leak currents and equilibrium potentials as well as for the noise current that can be added.

The SimNeuron **tutorial** is now directly referring to the SimNeuron laboratories with several extensions, e.g. a paragraph about tail currents and a more detailed description of the Neuron Editor.

The last chapter describes the **pre-settings** which are accessible via the corresponding buttons in the tool bar of the labs. The initially set password is: admin.

Please check your SimNeuron version number. The number of the latest SimNeuron version is **2.3.1** which is significantly extended compared to previous versions.

SimMuscle:

While eliminating a previous error, appearing with superposition of muscle contractions on very short stimulus intervals, unfortunately, another error has been introduced in more recent versions: When repeated but clearly separated muscle contractions were generated, the first one was slightly smaller than the following ones. This is now corrected.

Occasionally appearing problems with correct adjustment of the wheel buttons of the oscilloscope have been eliminated.

The latest SimMuscle update has the **version number 2.2.3**.

SimNerv:

Corresponding to SimMuscle, there were occasionally appearing problems with correct adjustment of the wheel buttons of the oscilloscope which have been eliminated.

SimNerv with **version number 2.2.2** is the currently latest program version.

SimVessel:

In SimVessel, the parameter values have been adjusted so that the substance concentrations in the test tubes are sufficient to bring the dose-response curves of muscle contractions up to clear saturation and to illustrate the effects of competitive and non-competitive inhibitors.

The initial error with Phentolamine vs. Propranolol effects on the Antrum has been corrected. Also, an occasionally appearing error bringing the muscle stripes abruptly to maximal length has been eliminated. The tutorial has been slightly extended but is still in a rather preliminary form.

Last major corrections have been made in May 2015. The version number appearing in the program is still **SimVessel 2.0**. Updated versions shall soon be deliverable.

SimHeart:

There were no recent changes in SimHeart laboratory. The latest version number is **2.2**.

New Setup (.msi) Files for Program Installation:

We have designed new setup (.msi) files (download links below) especially because installing the programs in the Windows "program files" folder (in German: "Programme") often has led to problems, especially when users wanted rename or replace the tutorials and/or protocols that are directly accessible from the virtual labs. Windows then might have reinstalled the original structure.

Moreover, because several users had problems with the previous.avi videos, these new setup files will come along with **videos in .wmv format** for Windows Media Player. We anyhow hope that we soon can deliver high resolution preparation videos. On our Website you can find the links to preliminary versions of heart and smooth muscle preparation videos.

Please note: The new setup files will install the programs in a **folder without "II"** at the end, e.g. just "SimNerv" instead of "SimNerv II". Nevertheless, when the new versions are installed via the same path as the previous ones the license files will automatically be overtaken. The previous folders (with "II" at the end) will not be deleted, however, the icon on the desktop will then be linked to the new version (if you did not deactivate the button asking for icon generation at the end of the installation procedure).

You still can use the original download links (also again given below) to get the updated versions which you then will receive in previous form, e.g. with .avi videos.

When opening any of the .msi download links you now will find the version number of the program.

Current activities:

SimVessel: We are currently working on an extension of SimVessel by a third preparation, the rat duodenum. The idea is to illustrate more clearly the different forms of smooth muscle contractions (tonic, phasic and mixed tonic-phasic) and the diversity drug effects. We hope that we soon can deliver the new version with an appropriately extended tutorial, then also including protocol forms.

Preparation videos: We have been bringing together a group of experts from experimental physiology and professional movie makers to produce high resolution preparation videos, also in stereo-3D. The shootings for SimHeart and SimVessel have already been made. Cutting and post production will still need some time. So far, we have some preliminary versions of heart and smooth muscle preparations which you can watch or download from our website.