



## Andrew Lab: the free software for protocol design

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Andrew Lab version 1.5

### GENERIC PROTOCOL DESIGN MADE SIMPLE

Andrew Lab is a software program created explicitly for designing generic pipetting protocols (**Figure 1**). Also designed to be used in conjunction with the Andrew suite of liquid handling robots, it is specifically aimed at optimizing and documenting the pipetting process. The Andrew Lab software renders pipetting steps easier to accomplish, concentrations and combinations of compounds easier to import and export, and protocols easier to share and teach. The intuitive drag-and-drop approach

of Andrew Lab lets you define and verify the volumes, destinations, concentrations and modality for every liquid handling step. With easily shareable and readable protocols, training new team members can be achieved within minutes with minimal efforts and without execution ambiguities. From the simplest aliquotting to the most complicated ELISA or Next Generation Sequencing library preparation, Andrew Lab will help you stay organized and define your bench work accurately.

### UNIQUELY FEATURED FOR EASY AND CLEAR PROTOCOL DESIGN



**Figure 1:** Introductory screen describing the main features of Andrew Lab. A full user guide of the software can be downloaded by clicking at the bottom left of the screen.

Consumable name	Position	Stock solution name	Final concentration	Final volume (µL)	Stock solution Name
1.5 mL conical tube #1	-	Water	0 a.u.	200	<input checked="" type="checkbox"/> Protein A
1.5 mL conical tube #2	-	Protein A	499.996 mg/L	200	<input checked="" type="checkbox"/> Water
1.5 mL conical tube #3	-	Protein A	124.998 mg/L	200	
1.5 mL conical tube #4	-	Water	0 a.u.	200	
1.5 mL conical tube #5	-	Protein A	31.249 mg/L	200	
1.5 mL conical tube #6	-	Water	0 a.u.	200	
1.5 mL conical tube #7	-	Protein A	7.812 mg/L	266.666	
1.5 mL conical tube #8	-	Water	0 a.u.	266.666	
Protein A @ 2 g/L	-	Protein A	2 g/L	AUTO	
Water @ 0 a.u.	-	Water	0 a.u.	AUTO	

**Figure 2:** Serial dilution calculations which can be exported to the clipboard for the creation of .txt or .xls files

- Intuitive drag-and-drop allows training-free protocol design and **unambiguous documentation (Figure 1)**
- Automatic calculations of required reagent volumes, consumables and tips for a **right start**
- Export your concentrations, contents and sample positions in multi-well plates or tubes racks for **an integrated and error-free data analysis (Figure 2)**

- Multi-language protocols sharing and translation for a simplified and more effective **teaching, documentation and transmission of bench work activities**
- Annotate, edit, store and print protocols in pdf format to **facilitate traceability and version management**
- The Andrew Lab software is freely available for download and without functionality limitations for widespread use and adoption

### FREE DOWNLOAD IN THREE SIMPLE STEPS

Download the Andrew Lab software off the Andrew Alliance website, [www.andrewalliance.com](http://www.andrewalliance.com) and begin designing protocols in a few simple steps. **First**, fill in the contact information with a valid email address, and the download link will be sent to your inbox.

**Second**, follow the instructions in the email, including downloading Adobe AIR first, then Andrew Lab second.

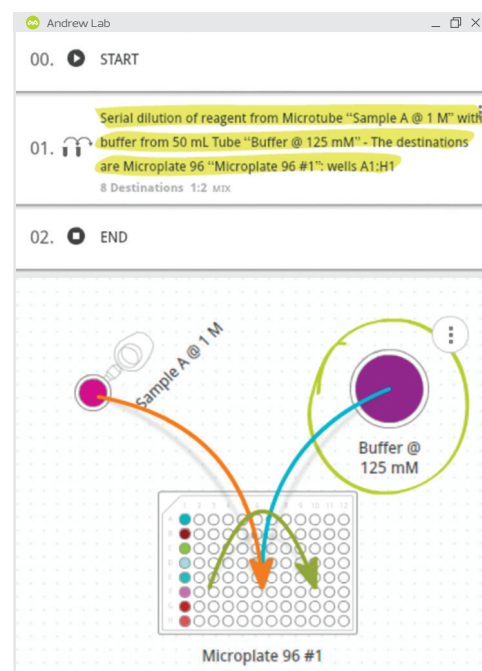
**Third**, open the software and you are ready to start designing your pipetting protocol in Andrew Lab! The user manual, which can also be accessed once you start designing a new or editing an existent protocol, contains all the details about how to make the most of every feature of Andrew Lab (**Figure 1, bottom left**) such as normalizations, magnetic separation or one-step dilutions wizards.

## QUICK START TO PROTOCOL DESIGN: NO PROGRAMMING SKILLS REQUIRED

The first thing you will see once you click 'design a new protocol' is an overview of a virtual bench, where you can drag consumables from an extended library. Once you are ready to start designing a protocol, simply drag and drop with your finger or mouse cursor among the consumables as if you would be pipetting. Protocol instructions are automatically created for you. For more advanced operations, besides the user guide, you can follow the short tutorial videos posted in the Andrew Lab section of our website (<http://www.andrewalliance.com/#protocol-design>). To demonstrate in a different way the simplicity of designing experimental protocols with Andrew Lab, guided steps for creating an example of a simple serial dilution are included in the figure below (**Figure 3**). Details or comments about protocols that users might consider pertinent to do-

document can be written in the "Protocol description" window under the "protocol parameters" section. By clicking on the arrow at the top left of the protocol design window, you can go back to the master view of your protocol in a logbook format, which summarizes the protocol steps as well as the stock solutions and materials required for its execution. There, under "Preferences" section at the bottom right of the screen, you can change the language of the protocol among more than 10 different ones. In case the protocol needs to be shared, printed or attached to physical or electronic lab notebooks, it can be easily exported to a PDF document by clicking on the orange printer icon at the top right of the screen, and all protocols details will be automatically captured.

- 1 Drag a consumable to store your sample to be diluted from the left panel.
- 2 Double click on it and fill in the Stock Solution information.
- 3 Drag a consumable to store your buffer for diluting from the right.
- 4 Double click on it and fill in the Stock Solution information.
- 5 Drag in a microplate consumable to create your serial dilution in, without inputting any stock solutions as it meant to be empty.
- 6 Click Add Protocol on the top, and select Serial Dilution.
- 7 Drag the Sample tube (reagent), Buffer tube, and Destination plate into the correct spots. A schematic of the microplate will appear so you can select the destination wells. They can be selected individually, by row, by column or the whole plate.
- 8 Input the buffer volume to be added to each well prior the dilution step, and the dilution factor for the sample to be diluted. Sample concentration and volumes of the sample and buffer at each dilution step are automatically calculated.
- 9 Choose desired pipetting parameters under «Pipetting mode», «tip choice», «Tip position» and «Mixing' sections.
- 10 Click 'Done' and you are ready to pipette your serial dilution.



**Figure 3:** Follow these instructions to create a serial dilution in a 96-well microplate, with screenshots of the end result viewed in Andrew Lab.

## ANDREW LAB; REALLY AVAILABLE FULLY FEATURED FOR FREE?

**Andrew Lab is available free of cost.** Really. The full software program, with all features without limitations, is freely available to download. Andrew Alliance is primarily and passionately committed to improving scientific research by creating robotic solutions for liquid handling. However, because your input is the most precious asset for us to make

Andrew Lab even more user-friendly and effective, we believe that a free stand-alone Andrew Lab software can meaningfully contribute to this objective. Let us make together protocol design easier and error-free so that the focus can be on what is really important, science!

Still have any questions about getting started with the Andrew Lab pipetting software? Get in touch!



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