

Automating Biology Lab Protocols with the OT-2



Authors

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INTRODUCTION

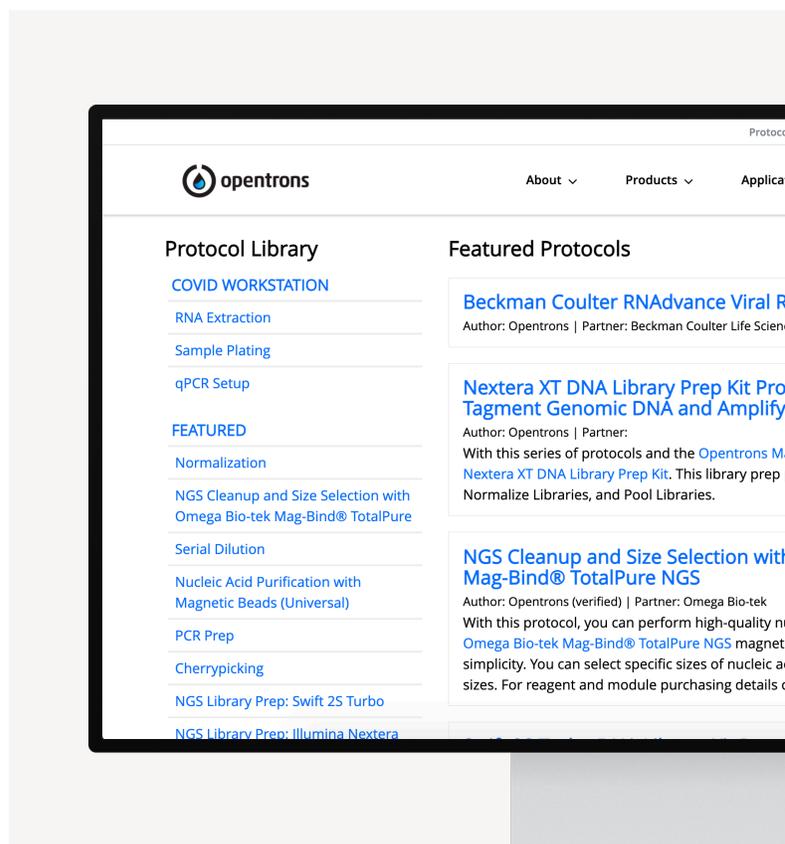
Automating biological laboratory protocols on the Opentrons' OT-2 robotic liquid handling platform is adaptable for various OT-2 workflows. The Opentrons' OT-2 Protocol Library provides users with open source and well-documented protocols, which are beginner-friendly and ready-to-use. This is typically the first option for users to gain experience performing protocols on the OT-2. We recognized that workflows vary, and further protocol optimization may be required. We offer enhanced options for optimizing workflows on the OT-2, including Protocol Designer, Python API, and Custom protocols. The Opentrons' Protocol Designer (PD) helps integrate modules and labware on the OT-2—without requiring the user to write code. For further protocol optimization, users can implement Opentrons' Python API for writing and automating code for biological protocols on the OT-2. Further assistance by the Opentrons' engineering team can develop a customized protocol for writing automative scripts for the OT-2. Here, we describe each of the Opentrons' API options and provide helpful resources to help navigate users to automate protocols on the OT-2.

THE OPENTRONS' PROTOCOL LIBRARY

Users can immediately access and download ready-to-use OT-2 protocols—without the user needing to write code. The protocol library contains hundreds of protocols developed by the Scientific team at Opentrons. Users can access, download, and run protocols from [Opentrons' Protocol Library here](#).

THE OPENTRONS' PROTOCOL DESIGNER

The Opentrons' Protocol Designer is a graphical interface that allows the users to optimize protocols that utilize existing scripts or import a CSV containing protocol



Screen displaying the Opentrons Protocol Library

specifications, which doesn't require the user to write code. The Opentrons' Protocol Designer is visual, intuitive and provides batch edit multiple steps for optimizing the OT-2 protocol, which includes liquid handling management, customized pipetting techniques, and integrates labware and modules. However, there are limitations in a user-defined variable and conditional logic, looping steps when automating the protocol, integrating higher liquid handling actions, and no integration with the Python program.

The user can customize an existing protocol without editing the code by selecting the available parameters using the drop-down menu. Upon choosing a protocol,

For a bulk service quote of a minimum of three customized protocols, we offer a discounted price of \$2,750—with a turnaround time of two weeks. Our team can perform an expedited protocol development—with a turnaround time of one week for an additional \$400.

Our team can work with your sales representative to set up a customized protocol development for your laboratory. To contact the Opentrons' Application Engineering team or submit a request for protocol development, please click here: [\(Custom Protocol link\)](#).

CONCLUSION

Here, we described an overview of how users can automate their biological protocols on the OT-2. Users have access to hundreds of well-documented and scientifically proven protocols optimized for the OT-2, which are available in our Protocol Library. In addition to this available tool, users have access to the Opentrons' Python API, which allows the user to write codes for automating protocols on the OT-2. Moreover, the user can develop a customized protocol by selecting available parameters using our Protocol Designer—without modifying the code. For further assistance, the Opentrons' Applications Engineering team can develop customized Python protocols using our Python API with a lead time of under two weeks for users who require additional support.