Electronic Lab Notebook (ELN)

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1- INTRODUCTION

Thank you for choosing one of AgileBio’s solutions for the management of your lab. The **ELN add-on** is a web-based solution allowing efficient management of all your experiments in the lab. An unlimited number of books, experiments and pages can be created. Powerful tools are included to produce added value to your notebook:

- Text/Table Interface
- Mass Doc/Picture/Molecules Import tools
- Chemical reaction/Diagram Designer
- Template/Workflow management
- Versioning
- Activity Log
- Electronic Signatures*
- Task time reports
- Pdf/Print/Zip export
- Template/Workflow management
- Versioning

The ELN provided by AgileBio is suitable for research projects, technical platform service activities and company projects.

**ELN add-on** can be fully integrated with LabCollector, the LIMS we developed for life science research labs, Pharma and biotech industries. Indeed, you can link information from LabCollector to an experiment and a page.

**LabCollector** is a copyrighted product from AgileBio.

* Requires an extra purchase.
2- GETTING STARTED

You can get the **ELN add-on** by downloading from [www.labcollector.com](http://www.labcollector.com). LabCollector software has to be installed first as it contains the framework. LabCollector support documents for installation are available on our website. **ELN add-on** can be installed on any operating system (Windows, MacOS X and Linux). Installation is performed by AgileBio on cloud hosted instances.

As a general note, making a backup of LabCollector prior to installing or updating a new add-on is recommended.

A changelog is included in the download package. It is also available by navigating the browser URL on LabCollector at */eln/CHANGELOG.txt.

1/Manual mode:

Unzip and paste ELN add-on folder in the extra modules folder. For Windows, it would look like:

C:\Programs\AgileBio\LabCollector\www\lab\extra_modules\eln

Open LabCollector, the ELN add-on module is now activated. Click on the module, a confirmation screen will help you to proceed with the installation.

2/Automatic mode from LabCollector interface:

You can also add the ELN add-on via the LabCollector Menu

**Admin > Setup > Upload/Add Addons > Upload Addon ZIP > Add Addon**

Return to the LabCollector homepage, the **ELN add-on** module is now activated. Click on the module to finish the installation.

The size of the ELN folder might exceed the limit of maximum size allowed for POST data. If this occurs you will have to edit the file php.ini:

```ini
; Maximum size of POST data that PHP will accept.
; Its value may be 0 to disable the limit. It is ignored if POST data reading is disabled through enable_post_data_reading.
; http://php.net/post-max-size
post_max_size = 80M
```
If the zip file is too heavy the automatic mode may not work, in this case please proceed with the manual mode.

The add-on will remain in a 30 days free trial mode until you save the final license. To obtain a valid license, you have to copy and send the computer activation key to AgileBio. You may also use the client area of the labcollector.com website to obtain or update a license.
3- OVERVIEW

A Lab Notebook is used to:

• Record and share experimental results
• Ensure traceability of research results (date, author, identity of samples, equipment usage)
• Facilitate knowledge transfer
• Help you in a qualitative way

An Electronic Lab Notebook allows you to do all of the above more easily, while also minimizing or eliminating the following common problems:

• Illegible handwriting
• Notebooks in various inconsistent forms
• Loss / disappearance of notebooks
• Unsigned pages
• Images that tarnish or degrade over time
• Results that are left out of an experiment
• Loss of raw data
• Pages that fall out after years of use

The ELN also adds the following important and useful functionalities:

• Your lab knowledge repository is easily searchable
• Sharing - notebooks can be shared instantly with colleagues
• Directly link to sample and instrument records used in experiments
• Built in diagram, image and spreadsheet tools
The ELN’s main interface is composed of:

- A top line with basic information displayed:
  - LabCollector (or Lab image) that redirects to the main home page
  - User information
  - Logout button

- A menu bar on the top right with 5 tabs:
  - Home
  - New Book/Project
  - Add Log Entry
  - Options
  - ADMIN (for configuration, templates, and signatures)

- A search menu by keyword or tag with filters (under Search options) on Project, Book, Experiment and date.
• Timeline showing the last ELN events
• A Tree View on the left to switch easily between books, experiments and pages.
• A viewer to display book, experiment and page details.

The LabCollector ELN is based on an architecture with 3 levels:

1. Book: it can be used in a classic way, i.e. single user, or in project mode, i.e. multiple collaborators in one book. The number of books is unlimited.
2. Experiment Folder: this is an organizational level, an experiment can regroup several pages, and you can setup task lists and more.
3. Page: where you annotate your experiments and sign/close when the step of this page is done.

⚠️ The page is the level corresponding to the page of your paper lab notebook.

Note: a language selector is integrated to switch easily between English, French, German, Spanish and Portuguese interfaces (see chapter 5).
4- ADMIN TAB: How to configure your ELN

Only users with an administrator profile can access the ADMIN menu in its entirety. Under ADMIN > Manage is where you will do the general configuration of your ELN, so if you are deploying the ELN for the first time be sure to check all steps in this section.

From the ADMIN menu, you can also manage workflows, pages/chemical reactions/spreadsheet templates and custom fields to standardize writing procedures of experiments (see Chapter 7-).

Managers can get an overview of the ELN activity using the Log Activity (last 50 entries), the audit tools and the task time reports. Filters by user and/or date range are available to execute more specific audits. For more details see Chapter 8-.

Super-administrator, administrators can manage digital certificates, page validation and signing from this menu. This last section is also accessible to some users. For more details on these functions, see Chapter 9- of this user guide.
4-1. Permissions

In ADMIN > Manage > Advanced Permissions, the super-administrator can manage users’ permissions:
- Basic selection corresponding to actual users’ permissions.
- Advanced selection: super-administrator can define PI for each group and PI can define specific user’s permissions.

⚠️ Read the following points carefully to ensure each user has the correct access.
Each user account should be checked for correct permission level and access.
- Admin level users have extra rights because they have admin level access. Admins have significant permissions to view and edit many things by default throughout LabCollector and add-ons.
- Being an admin doesn’t involve VAB (View all books) permissions. But if the user is PI, they do see all books of their group (or all books if the group = Full Access)
- VAB access is not set initially. This must be done by the super-admin or admins.
- The default group of Full Access should be reviewed for all users to ensure appropriate content is available for viewing and editing.
- VAB and full access will allow an admin to view and edit all books.
- Individual books/projects have access rights as well.
Basic selection opens two more tabs:

1/ Add Book/Project Rules, where super-administrator selects if an administrator, staff and/or user can create new books.

```
<table>
<thead>
<tr>
<th>User level</th>
<th>Create New Book/Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>User</td>
<td>✓</td>
</tr>
<tr>
<td>Staff</td>
<td>✓</td>
</tr>
<tr>
<td>Administrator</td>
<td>✓</td>
</tr>
</tbody>
</table>
```

2/ [All Books] Tab Access, allows the super-administrator to configure access to All Books.

```
Full Access for Admin (All Books)
- ON (Read/Write)
- OFF
- SPECIFIC (Select Admin User)

Specific Access
Admin       | View/Write All Books |
-------------|----------------------|
All          | ✓                    |
Admin        | ✓                    |
Staff         | ✓                    |
```

Advanced selection allows for the choice of a PI for each group, and permissions for all users. The PI can then define permissions for users in their group, like the super-administrator.

Per user, permissions are:
- **All**: All permissions
- **C/EW**: user can create and edit workflows
- **C/ET**: user can create and edit templates
- **ANB**: user can add new books
- **VAB**: user can view all books
4-2. File upload options

The super-administrator and administrators can manage file uploads and page associated files options.

Size limits per file are defined in the information section.

When files are upload in Associated files section, you can activate an option to block their deletion. For more information, please see section 6-8.

You can also manage the storage system of the files uploaded in the ELN. If this option is not activated, files will be registered in the database by default. If this option is activated, files will be registered in a defined folder. A folder has to be defined in the path section. To verify your path, you can test it (Try button + legend: not tested, correct path, incorrect path).
You can customize the maximum size/file authorized in database, for example here:
- 0M: Files will be stored in the defined folder (path section).
- 100M: Files will be stored in the database
- In the other cases, like on the image above, 1/Files will be registered in the database if the file is ≤ 10M and 2/Files will be registered in the defined folder if the file > 10M.

4-3. Spreadsheet Editor

The Spreadsheet Editor is an Excel-like tool, you have two options: either using the Java or Zoho Spreadsheet. You have another built-in spreadsheet which is the Flat Spreadsheet that is automatically enabled (see Flat spreadsheet and spreadsheet Data)

⚠️ Note that to use a JAVA spreadsheet your web-browser must support java plugins. At the time of releasing this manual, only Internet Explorer is compatible with JAVA spreadsheets, we thus recommend using Zoho Spreadsheet.

To use Zoho Spreadsheet you have to comply with the Zoho terms of service and privacy. Zoho Spreadsheet has a free mode that allows using this tool with 300 user document session per month (only one user account can be linked to your LabCollector ELN). To know more about Zoho pricing check here.

⚠️ If you are using LabCollector ELN from a domain accessible to the internet (cloud hosted or other) Zoho Docs is just used to display the information but no data is saved on the Zoho platform, all your spreadsheet data is saved locally on your LabCollector ELN server. In this case you just need the APIkey - do not fill the token field.

⚠️ If you are using LabCollector ELN from a local server not accessible by internet (you need at least outbound internet access), the file will first be saved in Zoho Docs and then on the LabCollector database. Once, the spreadsheet is saved on LabCollector database it is automatically erased from Zoho Docs.
To enable Zoho Spreadsheet:

1. Go to ADMIN > Manage > Spreadsheet Editor

2. Select Zoho Sheet API

3. Create an account at Zoho using the following link https://officeapi.zoho.com.

4. Once your account is created, copy and paste the API key. If your ELN is hosted on a cloud server or a server reachable by internet skip step 5.

Note: on this page, you can also follow your API Calls.

5. If you are on a local instance, you also need to generate a token. Click on “get/refresh token”. A window will open, enter your Zoho login/ password,
and press **Generate token**. The token will be entered on the main page under “Token generated with Zoho”

6. Click on save to validate your settings.

For more details on how to daily use Zoho spreadsheet, please refer to Flat spreadsheet and spreadsheet Data.

**4-4. Auto login time out**

Users can activate this function to block access to their ELN if it is not in use. Once activated, choose the Time Out in minutes, from 5 to 20 minutes, then save.
4-5. Digital Certificates Options

Authentication can be configured at this stage via ADMIN > Manage > Digital Certificates Options:

- No authentication (no password, no certificate needed)
- Login Authentication: authentication with your LabCollector login
- Certificate authentication
  - By password: authentication with the password generated when you create your digital certificates
  - Or by private key: authentication with the private key file saved in .pem and the certificate password

For more information on digital certificates and electronic signature, please read chapter 9-.

4-6. License

In this section, you can find the information about your license.
If you are installing LabCollector for the first time, copy the machine key and send it to support@agilebio.com. A license key will be sent and you need to enter this here.
You can also check the options covered by your license:

- Digital Certificates
- Chemical Drawing
- PhotoBank
5- OPTIONS

From the Options menu, you can select to display the ELN interface in English, French, German, Spanish or Portuguese. Tree View management options are available in this tab (see above).

Through this menu you can also access tools to merge/compile two or more pages in print/pdf views (report arrangement).

To select pages, click on Expand All, then Select Pages button and check pages.
Then choose your printing method (PDF or print) through the **Options** menu: click on merge selected pages (print) or merge selected pages (PDF).

The Tree View panel displays books, experiments and pages. Three tabs are available to manage the Tree View:

1. **My Books** (default setting): displays all books created by the user.

2. **My Collaborations**: displays books for which the user has been identified as a collaborator. A collaborator can view, edit and modify experiments and pages (depending on their rights).

3. **All Books** (only displayed with Admin status or the users with permission to see all books): displays all books of the lab or group.

A **Quick search** engine by keywords (focus on names only) or barcode is integrated allowing users to quickly find books, experiments and pages. Navigation between results is possible using **Find Next** and **Find Previous**.
The separation between the Tree View and the main panel is flexible. To modify the tree view dimension, click on the separation line between both panels and drag it to the left or to the right according to your needs.

Users can hide or show archived books to refine the Tree View display. Archived projects are hidden by default.

A Drag & Drop function is activated in the tree. You can move experiments (and all the dependent pages) from one book to another and move unclosed pages from one experiment to another, as you need. Rules apply to do this, i.e. you cannot move a closed page without moving the whole Experiment folder.

You can hide the tree view using or display the Tree View options using next to the search menu or from the Menu bar: Options > Tree Options.

Several options are available to manage information displayed in the Tree View:
- Hide closed pages
- Display only created or modified pages
- Select a time period
- Use ASC/DESC button to display books and experiments by ascending/descending order
- By default, Tree View elements are displayed by date of creation but you can sort them by alphabetical order.
As a reminder if a filter is applied, the tree view icon will be shown like this. Thus, if you wish to see all the books you have permissions to, click on the Tree View option and remove filter selection.

Navigation in a book can also be done without the tree using the breadcrumbs trail on the top of the book, experiment or page.
6- ELN DAILY USE

As described on the OVERVIEW chapter, LabCollector ELN is based on an architecture with 3 levels:

1. Book: it can be used in a classic way, i.e. single user, or in project mode, i.e. multiple collaborators in one book. The number of books is unlimited.
2. Experiment Folder: this is an organizational level, an experiment can regroup several pages, you can set up task lists and more.
3. Page: it is where you annotate your experiments and sign/close when the step of this page is done.

The page is the level corresponding to the page of your paper lab notebook. Book and experiment levels are designed for organizing work coherently.

6-1. Book: How to create and manage

To create a new book, click on New Book/Project button in the main menu. To have access to this tab you must have the correct permissions (see Chapter 4-1).

A new window will open so you can enter the details of your book:

Choose a name and add tags to help you with your search if desired (Write the tag and press ENTER to validate each tag). You can also relate a book to a project code existing in LabCollector and insert a color for the book. To validate your book creation, use the button Submit.
Once the book creation is finished, you can retrieve your information on the viewer. You can edit the book’s name, colors, tags, project code and use the field content if needed using **Edit** buttons or **double click** on each section to activate the editing function.

**Book:** name and color can be edited. The color is designed to make it easier to find relevant entries (see image).

**Project Code:** these are the same project codes you have in your LabCollector. To create a new one go to the LabCollector main interface **TOOLS> Manage Project Codes.** For more information check the [LabCollector Manual](#) Project Code Chapter.

**Tag:** you can add a new tag by entering its name and pressing enter to validate. Tags are bookmarks for easy searching; you can find this section on the other levels as well.

**Content:** for more details on the text editor, see [Chapter 6-4](#).
The book owner can now define several collaborators (1) who will be able to view and modify the book. The book cannot be deleted but can be archived (2).

Use the link **Manage user’s access** on the right (1) to access collaboration options.

If you have created the book or you are an administrator/PI, you must have the permissions to manage this on a particular book.

**NEW**! The owner (and the super-administrator) can change the ownership of a book. Just click on the link Change owner and select a new owner before validating.

**With Basic Permissions** (see [Chapter 4-1](#))

**With Advanced Permissions** ([Chapter 4-1](#))
More granular options are available with advanced permissions. To enable these options, tick the “Allow User Access” box, then choose your different options for edit and/or create a Book, an Experiment and Pages.

You have the possibility to add all members of a group at once by enabling the options for “All members”.

The blue arrows on the left and the right allow you to navigate from Full access group to the other groups in your LabCollector instance.

In the Pages section, the option “Close Page” gives the possibility to the collaborator to close pages in the book.

The “Sign Pages” option allows the collaborator (independently of their permission level) to access the menu ADMIN > Page > Page Signing to countersign the pages.

⚠️ If you have the sign page option in your ELN, the collaborators need to have an active digital certificate to sign and countersign pages. Refer to Chapter 9- for more details.

Your collaborators will see your book in the section My Collaborations.

For each book, you have a menu on the top right. You can Add New Experiment (Chapter 6-2), Print Book, Export in PDF or Zip format (PDF + attached files), and access the Book History.

If you choose to print or export, the book and all the experiments and pages associated with it will all be printed and exported. When exported in PDF or ZIP the PDF file has a table of content with the experiment and pages.
The **Book History** displays all book description versions. It is useful to identify page modifications and therefore it promotes traceability of lab work.

By clicking on the book name, you can view this version and compare it to a previous version (addition will be show in green, deletion in red). On the bottom of this page there are buttons to recover an old version. Use the active book name link to accept the recover action.

If you choose to recover a version, your book history will appear as shown below:
The same versioning option is available at the experiment and page levels.

Books are the only items that can be archived (Archive button on the bottom left). You can choose to archive them when they are not used or finished. This feature allows you to hide books in the tree view to ensure quicker navigation.

If you want to find an archived book, simply check the Show archived projects box in the tree view. You can unarchive a book by selecting it and use the Unarchive button.
6-2. The Experiment folder

This section is used to organize your experiment on a higher level; the experiment will assemble several pages in which the daily procedures are annotated (see Chapter 6-3).

First choose your Book on the tree view and click on Add New Experiment button in the main Book menu. You have two options:

- Create a **Default/ No workflow experiment**: you can add pages and page templates in the order that you want. The number of pages are unlimited in this experiment folder.

- Use a **workflow** (See Chapter 7-2): A workflow is defined by a pre-defined series of page templates and a pre-defined task list, the order of pages is set and completion of each step (page) is mandatory in the workflow. The number of pages will be limited following the configuration of the workflow. A workflow is useful when the lab executes routine experiments.

Once the Experiment is created, you can retrieve your information on the viewer. You can choose a name and add tags to help you with your search if you want (press enter to validate each tag). You can also decide to use a workflow in the list. To validate, use the button **Submit**.
By default, the experiment page has two more sections:
- Task list (see section 6-2-1)
- LabCollector Data (see section 6-2-2)

For each experiment, you have a menu on the top right. You can Add New Page (Chapter 6-3), Print Experiment, Export in PDF or Zip format (PDF + attached files), and access the Experiment History as for the Book. If you choose to print or export, the experiment and all associated pages will be printed and exported. When exported in PDF or ZIP the PDF file has a table of contents with the pages.

Experiments can be moved from one book to another using the related button Move Experiment To (left bottom of the experiment details). You can also simply use the drag & drop function in the tree (see chapter 5-).

Since you cannot delete an experiment, we recommend creating a book named TRASH and move the experiments that you don’t want to keep to this book.

6-2-1. Task list

The task list can be edited to follow experiment advancement. Each task is defined by a name, a date, duration and a ratio. If pages are already created, they can be linked to a task. A task can have a child-task (A), be checked (B, with timestamp), edited (C) and canceled (D, with timestamp).
A graphical view of tasks can be displayed using Gantt chart option. Tasks definition will allow you to edit task time and allocated resources reports for a project. For more information, see chapter 8.

6-2-2. LabCollector data link: quick overview

This section allows you to search or add a new record directly in your LabCollector data. You can also have access to this part when editing your text by clicking on the button, that will also allow the addition of a reference in your description text (for more detailed information see section 6-4-4)
6-3. The Page

Click on Add New Page button on the Experiment main menu or Add Next Page button in the Page main menu (this button is only available if the previous page is not closed).

Then, you should choose a page template (see Chapter 7-1.), a name and add tags to help you with your search if you want (Press enter to validate each tag). The page can also be associated with an icon for quick identification in the Tree View. Several icons are available. Those icons have no special meaning other than to allow for a visual distinction of pages. Just define the relevant meaning for each icon with your team. It could be a standard page, process, sequence analysis, calculations, etc.

⚠️ If a template is applied, the page is formatted using the predefined template allowing users to save time: just follow template instructions (see chapter 7-).  

Once the Page is created, you can retrieve your information on the viewer. You can edit the page’s name, tags and use the field content to describe your experiment.

For each page, you have a menu on the top right. You can find an Add New Page (if the page is not closed), Delete (if it is the 1st version) or Duplicate buttons. You can also Print and Export in PDF or zip format the page, and access the Page History.
By default (without a template), the ELN page has several sections:
1/4. Flat spreadsheet and SpreadSheet Data (see Chapter 6-5)
2. LabCollector Data (see section 6-4-4)
3. Infographic (Chapter 6-6)
4. Diagram Designer (see Chapter 6-7)
5. Associated Files (see Chapter 6-8)

All page content modifications are allowed until the page is closed/signed. This option is very useful to be compliant with a QA management system. Refer to Chapter 9- for more details.

Once a page is closed, a section erratum box will appear, allowing comments or rectifications on the page and a reference to another page with the rectifications. The previous sections of a closed page cannot be modified; the only editable part is the erratum box. The erratum box is included in the page versioning.
Page deletion is possible only if the section Content has never been saved (version 1). A delete button will be displayed on the page menu.

You can view the version number on the top left. This number changes after each content page modification.

By clicking on the version, you have the version list with the previous modification, with the name of the user, date and hour that this version was saved. You can thus compare it to previous versions and recover an old version of the page content.
6-4. The Text Editor: Content

For content field of books, experiments, pages and erratum box, you have the ELN text editor. To use the text editor, click on the Edit button.

In the text editor, you can find:

1. LabCollector tools:
   a. **Plate Insert**: you can find several predefined formats
   b. **LabCollector data link**: add an existing or new LabCollector record to the experiment (e.g. sample, primer…)
   c. **Page Cross-reference** between ELN pages
   d. **Mind the graph Infographic** (Chapter 6-6)
   e. **Photo Editor**, Image Upload and PhotoBank: to edit a photo directly in the ELN
   f. **Photo Editor**, Image Upload and PhotoBank from computer

⚠️ Please note that user can’t edit a page if it is already opened by another user (page locked on editing). All buttons turn grey.
g. 🌐 Photo Editor, Image Upload and PhotoBank: call an image from your PhotoBank gallery

h. ⚽️ Chemistry Insert (reactions and molecule drawing)

i. 📄 Special FASTA insert

If users need to import tables or text from other sources, they can use copy/paste (to paste in the ELN press Ctrl+V). If you have images in the text or table you are copying in the ELN, a window will open up, press Continue:
In the next window, press Ctrl+V again to copy and insert your images and then press Open:

6-4-1. Table

To insert a new table using the text editor click on the table button 📊. The Table Properties dialog window that will open, lets you set configuration options that define table size, its display properties, or other advanced properties.

Below is an overview of all the Table Properties tab elements:

- **Rows** – the number of rows in the table (obligatory).
- **Columns** – the number of columns in the table (obligatory).
- **Width** – the width of the table in pixels or a percentage value. Giving the width as a percentage value lets you set the proportion of the editing area that the table will occupy.
- **Height** – the height of the table in pixels.
- **Headers** – the drop-down list that formats certain table cells as headers, which applies special formatting to them. You can apply header formatting to **First Row**, **First Column** or **Both**.
- **Border size** – the thickness of the table border in pixels.
- **Alignment** – the alignment of the table on the page. The following options are available: **Left**, **Center**, **Right**.
- **Cell spacing** – the space between individual cells as well as cells and table borders, in pixels.
- **Cell padding** – the space between the cell border and its contents, in pixels.
- **Caption** – the label of the table that is displayed on top of it.
- **Summary** – the summary of the table contents that is available for assistive devices like screen readers.

**Note:** 1 pixel (px) is approximatively equal to 0.30 millimeter (mm).

By doing a right click on the table, other options will appear to edit your table.

Under the “Cell” section you can select one or several cells of your table and apply different actions:
- Insert cell Before or After
- Delete Cell
- Merge cells
- Split cells vertically or horizontally
- Cell properties for more advanced options

In Cell Properties, you can color the selected cells, as well as other properties:

By doing a right click on your table and choosing row or column you can insert a new row/column before or after the selected one or delete it. You can also delete a table or come back to the table properties.

6-4-2. Save action and automatic backup

To save the changes, click on the SAVE button, that will make the changes final on the new version of your page.
When you are drafting your work and change the page or book without saving your current work, the LabCollector ELN gives you a warning message, allowing you to come back and save your current work.

If something happens to your page, there is also an automatic backup (every 30 seconds) and a manual backup that are accessible until you save or cancel your new experiment or page. At the bottom of your text editor, you can find both buttons: to backup now and to restore backup. You can preview saved snapshots before restoring them and removing them.

Then go back to your page, click on the icon restore and select the last version, for example, and you will be able to retrieve the page with the changes you made. Press the SAVE button.
6-4-3. Plate Insert

The plate insert button is a quick way to have your plate grid pre-designed. You have the choice of selecting plates of 6, 12, 24, 48, 96, 384 wells.
6-4-4. **LabCollector data link**

This section allows you to search for or add a new record directly in your LabCollector data. You can also have access to this part when editing your text by clicking on the button 🌐, or in the table “LabCollector Data” that is found below the text editor.

By using the button 🌐 directly on your text editor you can also insert the link directly into the text as in the example above using the plate insert, all the records added will also be found in this table.

To insert a LabCollector link first select a module (1), then:

- If it is an existing record, you can use the keyword search and press the search button and check from the select list the record you want to link to the experiment (A-B orange).
• If it is a new record, after choosing the module click on new (A in blue), a window will open up for you to fill in the Record and Storage Data (shown below).

• You can also import the records from a memorized list:
  1- on your LabCollector perform a search and memorize the records

  2- Then on your LabCollector Data button in the ELN select “Memorized” and confirm the selection by checking the records:
On the linked records in the LabCollector Data, you can add a comment (which will be visualized only from the ELN), “insert link” in your text (only available when you use button on your text editor), access the data in reading mode or open them quickly in another tab using the icon. You can delete the association by using the icon .

You can retrieve these LabCollector Data links, from your LabCollector inventory modules, under a LabCollector record you will find the ELN icon, under this section you can find all experiments and/or pages containing experiments in which this record (samples, equipment, cell lines, etc.) has been used.
By clicking on the link, you can directly open the experiment or page. Note that to view the page you must have the right to see this book, if the book is archived, be sure to check “Show archived projects” under the Tree View (see Chapter 5-).

### 6-4-5. Page Cross-reference

While annotating, you can refer to another page or experiment in your text by clicking on the button ELN Reference 📚. A window will open, so you can choose the book, experiment and page to refer to.
Click on the ‘plus’ button to expand the book and experiment, click on the page link to insert it into the text, the page inserted will appear like this.

6-4-6. **Photo Editor, Image Upload and PhotoBank**

If you want to insert pictures, our advice is to use one of the applets: Photo Editor, add an image or the link to PhotoBank.

- Using the photo editor or , the image should follow the upload limits of the ELN (see Chapter 4-2) and should be in a standard format, i.e. .jpeg, .png or .bmap.
- **PhotoBank** Add-on allows you to import photos and videos in different formats (Tiff, MP4, etc.) and to insert an image in the ELN with a direct link to the raw photo.

If you want to modify an image before inserting it, you can use the photo editor applet. Thus, you can add legends, text box, arrows, etc. With this applet you can also directly take a picture and insert it in your ELN page.

The stickers (other forms/images that can be inserted on your picture) can be managed through **ADMIN > Template > Manage image stickers**. You can deselect or select default stickers or add your own images.
On the ELN page, you also have an image box on the top right, where you can insert an image (only one per page) by drag and drop or use the **ELNDocSend**, a simple mobile application to scan paper notes and send to your ELN.

---

**6-4-7. Chemistry Insert**

With the ELN Chemistry plugin, users can design chemical reactions which can be integrated into book pages, reporting, and reused and changed if needed (see chapter 7-1-3). Users can design chemical reactions by importing structures from LabCollector **Chemical Structures** module. New structures may also be drawn.

First, search for your molecule in the database then add it to the reaction. You can also recall the memorized chemical structures (see LabCollector Data-memorize items).

Then, add arrows or other symbols as needed.
Continue and finish your reaction by repeating the previous steps. Once a reaction is complete, it can be inserted into an experiment or page:

Here is an example of an ELN page with chemical reactions inserted into the content:

You can also draw your chemical reactions using the Diagram Designer (see Chapter 6-7).

6-5. Flat spreadsheet and spreadsheet Data

Three types of spreadsheet are available:
- A web spreadsheet or flat spreadsheet based on HTML5
- A Zoho Spreadsheet
- A JAVA spreadsheet
Note that JAVA spreadsheets need to be opened in a web-browser that supports java plugins. Only the current version of Internet Explorer available as of the date of publication is compatible with this, we thus recommend using Zoho Spreadsheet.

6-5-1. Flat spreadsheet

This spreadsheet is a simple tool for quick calculations and basic record keeping. On the page, to start using the flat spreadsheet, click on the Edit button on the right.

You have access to a spreadsheet with all the functions of a text editor and a basic spreadsheet; you can also choose to use a predefined template (see section 7-1-5). You also have the possibility to use mathematical formulas.

- Formulas must be written in English format.
- Formulas work with dot in decimal numbers.

The list of supported formulas can be found on this link of your Flat Spreadsheet.
There is also a list of supported shortcuts you can refer to. The majority of shortcuts are standard for most document and spreadsheet applications.

6-5-2. Zoho spreadsheet

Zoho spreadsheet is an Excel-friendly interface that uses Zoho Sheet to display the content.

To use Zoho Spreadsheet you have to comply with Zoho terms of service and privacy. Zoho Spreadsheet has a free mode that allows the use of this tool with 300 user documents per month (one user account is linked to your LabCollector ELN). To know more about Zoho pricing check here.

⚠️ If you are using LabCollector ELN from a domain accessible to the internet (cloud hosted or other) Zoho Docs is just used to display the information but no data is saved on Zoho platform, all your spreadsheet data is saved locally on your LabCollector ELN server.

⚠️ If you are using LabCollector ELN from a local server not accessible to the internet (with at least outbound access), you should first save in Zoho Docs and then save on
the LabCollector database, once you save on the database the document is erased from Zoho Docs. A few seconds between both actions is necessary.

To enable Zoho Spreadsheet see chapter 4-3.

On your page you will see the section Spreadsheet Data:

From this panel, you can:

- Import a file: supported files are: .xls - Microsoft Excel Spreadsheet, .xlsx - Microsoft Excel Spreadsheet 2010, .ods - OpenOffice Open Document Spreadsheet, .csv - Comma Separated Values, .tsv - Tab Separated Values
- Add a new one: Use a blank spreadsheet editor to create your own tables.
- Add a new one with a template: Load a spreadsheet template.
- Add a new template: Create a spreadsheet template to be used in routine. Spreadsheet Templates can be edited and modified from the Admin Menu (see section 7-1-4).

When the spreadsheet is opened, you can edit, modify tables and graphics to store your results. You can also open your spreadsheet in full screen.

Users must save tables into the database, otherwise information will be lost:

- If you are using Zoho in an instance accessible by internet (configuration with API key only) save in LabCollector ELN database just by clicking on the disk button

⚠️ Using this method, no data is saved in Zoho Docs
If you are using Zoho in a local instance (API key with a token) to save in LabCollector database, you need to first save on Zoho Docs by clicking on the disk button and then click on the button "Save into database". When data is saved the files will be erased from Zoho Docs.

Note that there may be a delay in saving to the database, so wait until the first step is completed.

You can download your spreadsheet even if a page is closed by clicking on the Excel icon in the top right corner:
6-5-3.  Java spreadsheet

Java spreadsheet is enabled by default; please see the specifications to use it under Flat spreadsheet and spreadsheet Data.

From this panel, you can:
- Import a file: supported files are: .xls - Microsoft Excel Spreadsheet and .csv - Comma Separated Values.
- Add a new one: Use a blank spreadsheet editor to create your own tables.
- Add a new one with a template: Load a spreadsheet template.
- Add a new template: Create a spreadsheet template to be used routinely.

Spreadsheet Templates can be edited and modified from the Admin Menu (see section 7-1-4). When the spreadsheet is opened, you can edit, modify tables and graphics to store your results. You can also open your spreadsheet in full screen.

Users must save tables into the database, otherwise information will be lost.
Formulas are allowed but they must be written in English format.

Formulas work with dots instead of commas for decimal numbers.

Now, you can download your spreadsheet as an excel file by clicking on the Excel icon at right.

Spreadsheet data are also integrated in the printable, PDF and zip versions.

6.6. Infographics

The infographics section is provided by one of our partners Mind the Graph, this is a platform for beautiful infographics with high level scientific illustration done by scientist-designers. You can have your infographic imported directly into the ELN, for more information check here:

https://mindthegraph.com/.
You can subscribe to this platform directly in Mind the Graph website or by opening the infographics section in the ELN or by clicking on the infographics button in the text editor.

6-7. Diagram Designer

LabCollector ELN integrates a Diagram Designer. Click on this icon and Create (on the right) to start a diagram. Multiple elements can be added like text, arrows, and numerous laboratory items, by using Add item menu and choosing between the elements.

Panel dimensions can be modified using the Panel Editor. You can define panel width and height quickly using your mouse. You can also add a panel grid in the background facilitating elements alignments. Click on the See Grid icon to display the grid.
Each element added appears in a grey box allowing users to manage box dimension easily. Note the box border and color aren’t displayed when you print a preview (paper version or pdf file report).

To print a paper version or see a diagram review, use the tab **Other**.

Images can also be added using the **Add Personal Item** tab. Select the image of your choice, give it a name and choose the size. Items can be imported in three resolutions:
- Small quality (40px * 40px)
- Medium quality (160px * 160px)
- Big quality (360px * 360px)
You can also define rules to manage image usage.

The last tab **Add New Molecule Item** allows the design of chemical structures and reactions. You can choose to import structures from LabCollector **Chemical Structures** module or design new structures directly from the Diagram Designer.

To import a structure from the LabCollector database (only **Chemical Structures** module), you must link the page to structures of interest using **LabCollector Data** (see section 6-4-4 Erreur ! Source du renvoi introuvable.). When chemical structures are linked to the ELN page, the tab displays the list of available structures. Select one structure to add it directly to the panel.
Users can also design their own chemical structures directly through the diagram designer using the **Add New Molecule** function (using the open-source editor Molsoft).

A new window containing a molecule editor appears. You can now design any molecule needed for your experiment. This tool includes a molecule database with the most used ones (Templates). A periodic table is also integrated. When the molecule is designed, define a name and click on **Submit** button to display it in the panel. Molecules in the panel can be modified using **Edit** function in the molecule box (grey).
6-8. Associated files

In the section Associated Files, any files can be easily attached to the page by drag and drop. Its status version can also be defined to follow the work progress: definitive, intermediate or discarded version with corresponding icons.

After adding a file, don’t forget to SAVE the action on the right. All those files will be in the ZIP export folder.

You can remove files by checking the case REMOVE then SAVE. If you set up OFF in File uploads admin section (see section 4-2), the REMOVE option will not be available.

6-9. Erratum Box

Once the page is signed/closed, no more modifications can be done on the page content (text, spreadsheets, images…). However, at the bottom of the page an erratum box is available for closed pages; you can use this section if you need to report a mistake or any other comment. You can also refer to another page with complementary information using the ELN cross-reference tool (see Page Cross-reference).
All comments done in the erratum box are also recorded in the page’s versioning history.
To make AgileBio ELN friendly to use, template and workflow functions have been integrated into the application. These options allow users to save time and use standard procedures to increase productivity and the quality of their work.

Don’t forget! If you activate Advanced Permissions, you can allow ELN users to create and edit workflows (C/EW) and templates (C/ET).

7-1. Templates

7-1-1. Create custom fields

To customize ELN pages and ELN pages templates, users can create custom fields. Go to Admin > Template > Manage custom fields

To add a field, choose a name and define the field type: text, checkbox, select list, date, link or a grid.
The maximum length of a text field is flexible depending on the required information.
It is possible to define a custom field as mandatory. This function ensures that the required information will be completed before closing the page. To help your colleagues to understand the data requirements, use the help text section.

A field can be edited using the icon 🖊.

For select list, checkbox and grid types, edit the values with the icon 📋.

The grid field type allows the creation of a two-column table that you can fill with values of your choice.

### 7-1-2. Page template

In this page, you can find your template library. Here, you have the list of all templates that you can view and use, as well as a search bar. To create a new template, click on the **Add Template** button. On the existing templates, you can view (A), edit (B), duplicate (C) and archive (D) them.
A template is already in the list by default. It is a blank template with the page options enabled; you can change this by editing this template.

On the same page, you have the versioning data for each template.

Templates can be organized by categories. Create your categories, first, using the Categories black button.

The template is identified by a name (1), a category (2) and a description (3) if needed. You can use the text editor to prefill your page (4).

Then, select in the template options (5) section what you want to use in this template: SpreadSheet Data (Java or Zoho), Diagram Designer, LabCollector Data, Associated Files and Flat spreadsheet. For the spreadsheets, you can also select a template already linked to this page template (see section 7-1-4).

Custom fields (6) created in the previous step (see section 7-1-1) can be selected here. Select the custom field in the select list and then press Add.
In the last section, you can configure access to this template (7). By default, templates are shared with all ELN users, if you want to apply another rule, **untick this option and choose another**, i.e. sharing with only your group and/or another or just some users.

Then, don’t forget to **Submit (8)** to validate your template. You can edit a template as needed.

These templates will be accessible when you create a new page in your book or when they are part of a workflow.
7-1-3. Reaction template

Users can design chemical reactions by importing structures from the LabCollector Chemical Structures module. Chemical reactions can be integrated into book pages, reporting, and reused and changed if needed. You can design chemical reactions by clicking on the chemistry plugin available in the text editor (see Chemistry Insert).

Continue and finish your reaction by repeating the previous steps. Once a reaction is designed, it can be inserted in a book page and saved as template.
To manage reaction templates, go to Admin > Template > View/Edit Reaction
Template. Here, you can edit your reaction with and delete a reaction with .
7-1-4. Data Spreadsheet template

From Admin > Template > Manage Spreadsheet Template, you can manage JAVA/Zoho (following the configuration of your ELN) spreadsheet templates. You can add new templates from this panel or you can view/edit templates saved in the ELN application. Templates can also be deleted.

To create a new template, click on Add a new template. A new window with a spreadsheet appears.

⚠️ You need to activate the JAVA plugin in your browser for the Java Spreadsheet.

Give a name to your template, and create the table that you need. Do SAVE.

You can also create a data spreadsheet template directly from your page by selecting the option “Add a new template”.

To edit a template, choose it from the select list (1) and click on View/Edit template (2). Change what you need (3) then SAVE (4).
7-1-5. Flat Spreadsheet Template

From Admin > Template > Manage Flat Spreadsheet Template, you can manage the Flat spreadsheet templates.

To create a new template, click on Add a new template (1). A new window with a spreadsheet appears (3).
To edit a template, choose it from the select list and click on View/Edit template (3). Change what you need (3) then SAVE (4).
To delete the template, click on Delete Template (5).
7-2. Workflows

A workflow is a sequence of connected steps that can be used in a work organization or a process. Workflows are useful for routine experiments, helping to standardize the writing of experiment reports to increase the quality of lab activities. A workflow is related to the Experiment level.

From the ADMIN menu, users (depending on permissions, see chapter 4-1) can add/edit a workflow by combining several pages (blank pages and/or templates) that will be applied in an experiment.

⚠️ Before editing a workflow, you need to define page templates if needed (chapter 7-1).

To create a workflow, click on Add Workflow on the top right.

1. Give it a name
2. Instructions for user or description, if you want.
3. Here you can list tasks corresponding to the process. Name the task, add a comment if needed, then click on Add item.
4. Choose the number of pages/steps describing your workflow and validate it.
If you want to associate a template to a page, choose from the dropdown. Default Template gives a “blank” page. For each page, you can request admin validation. If you check YES, the user **can’t create the next page** until an administrator validates the page.

5. Workflows can request general admin validation. If you check YES, the user can’t close a page. Only another administrator can validate the page (see section 9-2-2).

6. Validate your workflow.

---

**In this example, an admin has to validate pages 1 and 2 to allow user to create pages 2 and 3. Page 4 can be created without validation. User cannot close any page until the admin validates it.**

---

<table>
<thead>
<tr>
<th>Workflow Design Name</th>
<th>Instructions</th>
<th>Predefined Task List</th>
<th>Page Templates in Workflow</th>
<th>Admin Validation Required</th>
</tr>
</thead>
</table>

1. Workflow Design Name
2. Instructions
3. Predefined Task List
4. Page Templates in Workflow
5. Admin Validation Required
6. Validate

---

![Workflow Example](image)

---

**We recommend adding a couple of blank pages at the end of a workflow to allow for unexpected events even if the number of pages in the workflow is unlimited. Users will then be able to add corrections if signed pages contain errors or need additional information.**
To start an experiment, select the appropriate workflow in the list.

Your experiment details page will have a new section about workflow information.

The creation of the pages in your experiment will be automatic, following the workflow.
8- AUDIT, LOG ACTIVITY AND TASK TIME

The audit function allows team leaders to follow user activity on the ELN.

The Audit Trail displays all modifications done by the selected user, in a specific date range. Numerous actions are identified like page creation, modifications, signing, link removal, export, print, etc.

The View Log Activity records the same information as Audit trail but only on the last 50 entries and without filtering.

The Task Time function allows you to visualize the time required to perform project tasks. This report can be edited for a user, a period, and completed tasks. Export file is available with the excel icon on the right.
This feature is very useful for collecting task times and each user’s time per project.
<table>
<thead>
<tr>
<th>Book Name</th>
<th>Experiment Name</th>
<th>User</th>
<th>Task name</th>
<th>Date start</th>
<th>Date stop</th>
<th>Time</th>
<th>Completion</th>
<th>Executed time</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>test book creation</td>
<td>exp1</td>
<td>Anne-Laure Sauvadet</td>
<td>task 1</td>
<td>2015-12-22</td>
<td></td>
<td>78.00h</td>
<td>10.00 %</td>
<td>7.80 h</td>
<td>OPEN</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total time</td>
<td>78.00 h</td>
<td>10.00 %</td>
<td></td>
<td></td>
<td>7.80 h</td>
<td></td>
</tr>
<tr>
<td>WORM EXPERIMENTS</td>
<td>Sampling cruise</td>
<td>Anne-Laure Sauvadet</td>
<td>Samples collection</td>
<td>2015-12-22</td>
<td></td>
<td>8.00 h</td>
<td>20.00 %</td>
<td>1.60 h</td>
<td>OPEN</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total time</td>
<td>8.00 h</td>
<td>20.00 %</td>
<td></td>
<td></td>
<td>1.60 h</td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total time</td>
<td>88.00 h</td>
<td>15.00 %</td>
<td></td>
<td></td>
<td>9.40 h</td>
<td></td>
</tr>
</tbody>
</table>
9- ELECTRONIC SIGNATURES

Validation with electronic signature certifies the ELN contents and all links between the ELN and LabCollector Database. Before using digital certificates, LabCollector needs to be set up.

9-1. Manage Electronic Signatures

First activate OpenSSL and Curl on your PHP preferences:
- Windows: open LabCollector Manager, in Settings > Configure Servers > PHP, edit PHP.INI and uncomment (delete ;;) the following extensions: extension=php_openssl.dll and extension=php_curl.dll.
- Mac: contact us for more information
- Linux: install PHP-OpenSSL and PHP-Curl rpms.

For Win32/64 users, in order for these extensions to work, two DLL files (libeay32.dll and ssleay32.dll) must be available to the Windows system PATH (System32 or SysWOW64). For information on how to do this, see How do I add my PHP directory to the PATH on Windows.

Although copying DLL files from the PHP folder into the Windows system directory also works (because the system directory is by default in the system's PATH), this is not recommended. PHP folder is located in the main LabCollector folder, for example: C:\Program Files (x86)\AgileBio\LabCollector\php.
PHP will search for the `openssl.cnf` using the following logic:

- The OPENSSL_CONF environmental variable, if set, will be used as the path (including filename) of the configuration file.
- The SSLEAY_CONF environmental variable, if set, will be used as the path (including filename) of the configuration file.
- The file `openssl.cnf` will be assumed to be found in the default certificate area, as configured at the time that the openssl DLL was compiled. This usually means that the default filename is `c:\usr\local\ssl\openssl.cnf`.

Create the folder `C:\usr\local\ssl` (folder usr then local then ssl) and copy `openssl.cnf` provided in `\LabCollector\php\extras`.

9-2. Use electronic Signatures

9-2-1. Manage Certificates

Go to ADMIN > Manage > Digital Certificates.

From this page, the administrator can create and manage all digital certificates. Click on Create new user certificate and keys on the top left.

⚠️ All fields are required to create the certificate.

A certificate is unique and related to only one user. Once submitted, the user profile is displayed on the screen. Three keys are created:

- Private Key
- Public Key
- CSR (Certification Signing Request)
A signature image can easily be attached to the certificate. Just download it using the icon.

A certificate is valid for one year. It can be renewed by a simple click on the **RENEW** button.

Authentication can be configured at this stage via **ADMIN > Manage > Digital Certificates Options**:

- No authentication (no password, no certificate needed)
- Login Authentication: authentication with your LabCollector login
- Certificate authentication
  - By password: authentication with the password generated when you create your digital certificates
  - Or by private key: authentication with the private key file saved in `.pem` and the certificate password

---

**9-2-2. Page validation and signing**

Workflows are edited with two options: page validation/signing or not, as previously described ([Chapter 7-2](#)). To validate and sign workflow pages, go to **Admin > Page > Page Validation & Signing**.
A list of all pages that need to be approved/closed is displayed. The administrator can approve pages only if it’s required by the workflow. Approval and closing of all listed pages at once is also possible. The approval is indicated by a name and a date in the bottom of the page. When a page is validated, no more changes are possible.

Once the administrator Approves/closes the page, the user/owner can sign the page too. The certification process of the document is complete.

Both administrators/PIs and users can sign as witnesses. To see which pages need to be countersigned go to Admin > Page > Page Signing.
## ELECTRONIC SIGNATURES

### Closed Pages awaiting Admin Signing

<table>
<thead>
<tr>
<th>User</th>
<th>Date</th>
<th>Book Name</th>
<th>Experiment Name</th>
<th>Page Name</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anne-Laure Sauvadet</td>
<td>2015-10-09 13:00:58</td>
<td>HYDROTHERMAL EXPERIMENTS</td>
<td>Development</td>
<td>Gradient PCR eukF-R454/eukR-R454</td>
<td>Sign Page</td>
</tr>
</tbody>
</table>

Select [ ] to show only pages from user. Select [ ] to select a page. Select [ ] to cancel. You cannot sign your own pages.
10- UPGRADING AND UPDATING

To update or upgrade the Eln Add-on module, just download it from our website (www.labcollector.com). Then, unzip the folder and paste files in the following folder:

Ex. on Windows setup:

Programs\AgileBio\LabCollector\www\lab\extra_modules\eln

As a general suggestion, we always recommend making a backup prior to performing an upgrade or update.

If your instance of LabCollector is cloud hosted with AgileBio, contact a sales or support representative to update.