# Scientific Paper Step 2: Pre-outline

Congratulations on finishing step 1!

In step 2, you will think about:

- what your key results are expected to look like, even if you don't have them completed yet. These can change so don't worry about getting it perfect at this step. You are looking to clarify the direction of the paper
- the order in which you will present your result, which will dictate the storytelling of the paper. The order does NOT need to be the order in which you did the study, so think carefully about how to best communicate the results.
- an estimated timeline for completing the paper. Do your best here and don't worry about getting it perfect
- any course corrections you may want or need to make later
- how other people can help - don't underestimate this step!

Step 2 usually takes a little bit longer than Step 1, but can usually be completed in about one day. If it takes much longer than that, it's a sign that Step 2 is premature.

When answering the questions in this form, use plain, conversational language - short, simple sentences are preferred!

More information: https://github.com/computron/scientific-paper-flow

* Indicates required question

1.

Email *

## Tips for Step 2

Overall, your goal is to keep the momentum going. This means:

- Do not worry about final formatting - e.g., for figures do NOT worry about colors, font size, etc. at this stage. In fact, even sketches of figures are fine as long as you can articulate a clear vision of that figure

- Do not worry about final results or final data. It is OK to submit rough drafts or even sketches of figures or tables
- Do not worry about the text at all yet, that will come later.
- Do not worry about the references and citations - these can take a long time

If you submit Step 2 but don't feel clear in the paper direction, you can always repeat Step 2 until the vision is relatively clear. It is completely fine to repeat steps if needed.

2.

**Upload a single PPT, Word or PDF file containing all the figures and tables you have prepared so far for this paper.**
* Include the paper title and author list in the beginning
* Each figure or table should be clearly numbered (e.g., Fig 1, Table 1, etc.) so you can refer to it in the next question.
* Think carefully about the order of the figures and tables. What should be presented first, second, third, etc? Note that this order does NOT need to be the order in which you did the study. For example, it's likely you will validate a method first and then collect results - but some (not all) instances your paper may be better in the opposite order (results first, validation later).

*Note that the list of figures should include both polished/final items as well as any rough sketches for figures that may not have final data or be in final form. Even a doodle of a figure is OK at this stage, however you should have clarity on what the final figure will look like and where the data will originate from. If a caption is needed to understand the figure, please add such a caption.*

*Note that uploading sometimes takes a few minutes, please be patient.*

Files submitted:

3.

**Describe each of the items in the document you uploaded.**
For each item, indicate:
(i) The figure or table number you are referring to ("Fig 1")
(ii) is the figure final ("Final"), Close to final ("Close"), or Rough ("Rough")

(iii) if not final: what steps remain to make this figure final, and an expected timeline for each step
(iv) reasons why the above timeline(s) may be delayed, and anything you or a collaborator can do to mitigate the risk of delay.

*Example:*
*---------*
*# Figure 1*
*- Rough*
*- 1 week: finalize determining the workflow steps indicated in diagram which is just a sketch at this point*
*- 1 week: get buy-in from co-authors on final workflow*
*- 1 day: plot formatting, making it "pretty"*
*- Possible delays: co-authors don't agree on workflow steps; can schedule a pre-meeting in the next few days to discuss possible ideas with them in advance.*
*---------*
*

4.

**Apart from figures and tables, describe any other "outputs" of the paper that may require work.**
For example, this could be data sets, SI information (e.g., crystal structure files), or software repos that will be shared. For each item, use the same format as above.

*Example*
*---------*
*# Software (crystal analysis tool)*
*- Close to final.*
*- 3 days: document all the functions*
*- 2 days: full code cleanup*
*- 1 day: take care of proper Python packaging, double check requirements and installation*
*- Timeline may be delayed if a bug is found after analyzing all the results; can be mitigated by analyzing partial results in the next day before full data set analysis.*

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5.

**What conclusions remain uncertain at this stage?**
For example, you may be waiting for data to decide if a particular hypothesis is correct or to decide the best way to structure one of your figures.

[max: 2000 characters]

6.

**Answer the following questions to ensure that you have the right trajectory for the remainder of the paper.**
1. Are there initial ideas or approaches that don't seem to be working out or are taking much longer than expected? If so, what evidence do you have that things are going to get better over time?
2. New ideas or approaches you should be testing? Note that testing does not necessarily mean switching.
3. Any changes to the scope of the paper you should consider? For example, you can refer back to Step 1 of this form which had your responses for what were critical, intermediate, and ambitious goals.

[max: 1500 characters]

7.

**List ways in which collaborators of the paper may assist with unfinished items.**
Do not undervalue thinking about this step, you can finish more quickly and with more energy if you involve your collaborators!

[max: 1000 characters]

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