

Collaboration in Research



Why collaborate?

Maximize
Output

Expand expertise and resources that can be used to answer bigger more complex scientific questions

Maximize
Impact

Papers with more authors have been shown to achieve more citations, particularly if from different institutes¹

Attract
Funding

Widening the impact avenues of your research, can increase your chance of funding. Also increases funding avenues that may not be open to your sole area of research.

Expand your
Network

Meet potential employers, mentors etc.

Embrace the
New

Provides opportunities to widen your knowledge base and learn new skills.

¹Larivière, et al. *Team size matters: collaboration and scientific impact since 1900*. *J. Assoc. Inf. Sci. Technol.* 66, 1323–32 (2015).

The different forms of collaboration

1 Within the Institute

- Members of the same institute work together on a project
- Regular meetings to review progress

2 With private Company

- Company researcher works with the academic's lab for a period
- Learns new techniques they can take back to their company

3 Researchers at other Institutes

- Divide tasks among labs with similar expertise

4 With another Institute in person

- Researcher visits another lab for a defined period

5 Based on task expertise

- Divide tasks based on different expertise

6 Late stage

- Identify a missing element that could contribute to a project

What are the key factors that facilitate a productive collaboration?

Group work:



Break into groups and discuss what you would envisage as the important characteristics that facilitate productive collaboration

15 mins

Best practice for research collaboration

1. Address mutual expectations

- How much will each person contribute?
- How will credit be decided?
- Keep a written record e.g., confirming agreements by email following meetings

2. Clearly divide and establish responsibility for tasks

- Make project members roles clear

3. Determine authorship

- Agree on authorship at the beginning BUT link it to specific tasks
- If changes in the project start to alter contributions then speak up immediately

4. Take minutes of meetings

- Distribute at the end of each meeting, with actions noted
- Minutes are very useful in helping resolve issues

5. Access to data and expectations

- Discuss clearly who will have access to different parts of datasets being generated
- Decide how data will be shared, presentations etc.

Best practice for research collaboration

6. Working with Industry

- Put in place a clear collaboration agreement – start this as soon as the project is imagined!
- Be aware and adhere to any restrictions (e.g., theses, presentations etc.)

7. Research integrity

- Sharing data and non-standard verification pipelines can cause errors to creep in
- Ensure all funding sources are known to all parties

8. Communicate frequently

- Have regular meetings
- Define specific deadlines and check they are maintained
- This keeps expectations on track and prevents misunderstandings

Example: establishing an effective collaboration by email with known colleagues

Hi Willem, Botma and Zak,

We have a side project to see if we can develop any markers that could be used to distinguish Pgt vs. Pgs isolates. As you know these don't separate with the ITS sequence and for us this would be super helpful when screening samples from barberry in particular. We sequenced four Pgs isolates and found genomic regions that have no coverage in these Pgs isolates but are well covered in all Pgt isolates. Then we designed markers around these regions, where you should get one band if it is a Pgs isolate and two bands where it is a Pgt isolate. We did notice that our wheat DNA control did also amplify a similar sized band for one reaction (this could have been contamination). Hence, we also included a control reaction "Rust DNA" that just checks you do have Puccinia graminis DNA in the sample.

I've attached a full explanation of the markers and I wondered if you would have any isolates that you could test these on? We only had four Pgs isolates to hand for the design that were all from Germany so it would be nice to test these more broadly. If these do work then we will of course write up a short article and include you as authors.

Many thanks in advance for your help.

Best wishes,

Diane

Explain the background

Where they could contribute

What the outcome will be

Good morning Diane

Good to hear from you. Zak is currently on leave and might take some time to reply to your email.

Willem will know which Pgs and Pgt isolates to use, but I am more than willing to test the PCR reactions. However, with Christmas around the corner, our university has closed for the festive summer holiday, and will only reopen on the 3rd of January. We will only be able to order the primers by then.

Botma

Confirm they are happy to collaborate

Set expected timeline from their side

How to establish a new collaboration

Group work:

Scenario:

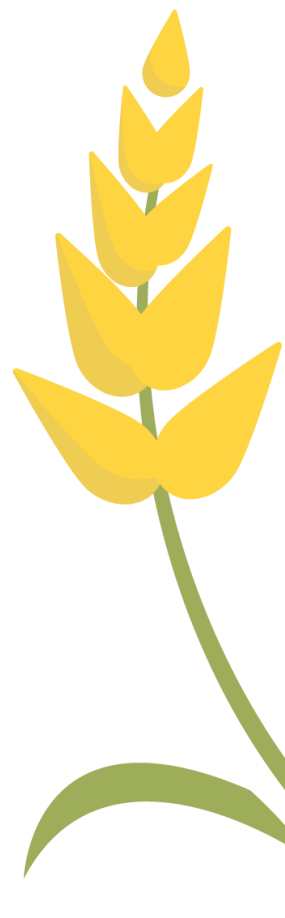
You are working on a research project where you reach a cross-road. You could draw the project to a close using your own expertise (Plan A) **BUT** there is a super interesting avenue that you could explore where a detailed understanding of maths is required (Plan B). This is way beyond your own expertise.

An ideal opportunity for a new collaboration!



1. How can you identify a suitable collaborator?
2. What is the best mechanism to initiate interaction with a potential collaborator?
3. What will you gain from the collaboration?
4. What could be potential concerns about collaborating? And how do you alleviate them?

20 mins



ROSALIND FRANKLIN
WOMEN
IN WHEAT
CHAMPIONS