## Progress report format

1. Accomplishments (target 250 words)
2. Challenges and how you addressed them (target 250 words)
3. Goals for the next week (target 100 words)

## Progress report rubric (100 points)

* Accomplishments (40 points)
  + Lists concepts/coding learned (30 points) For example:
    - List novel findings
    - Concepts learned
    - Coding solutions
  + List successful communication with instructors and classmates (10)
* Challenges and how you addressed them (40 points)
  + List specific challenges for the week (10)
    - If you did not have challenges, describe your strategies/background used to make this a challenge-free week
  + List your approaches for addressing this challenge (and if it is still outstanding) (30)
    - If you did not have challenges, describe how you helped others address a challenge (via Slack, meetings, group discussion)
* Goals for the next week (20 points)
  + List how current module’s objectives relate to next module (5)
  + List goals of the next module (5)
  + List content you want to revisit or you think would be valuable to learn more about (10)

## Example progress reports

To give you an idea of what a good progress report might look like, we have prepared two complete examples. The idea behind a progress report is to communicate what you have learned, what problems you encountered and how you are trying to solve them, and get you thinking about how your work fits into the bigger picture of what we are trying to achieve. The instructors fully expect that some weeks will be fairly straightforward for you and some weeks will be very challenging and that all students will have different struggles since you all have different backgrounds coming into this course – this is all exactly how research goes. Please use your progress report to take ownership of your experience and help you to guide yourself to ask good questions and share good answers.

**PROGRESS REPORT - EXAMPLE ONE**

**Name**: Student Studentson  
**Date Submitted**: March 3, 2025

**Module**: Module 1

**Accomplishments**

Concepts/coding learned

* Placenta biology:
  + Connects mother to fetus
  + Transfers nutrients and oxygen to and removes waste from the fetus
  + Extends mother’s immune function to fetus
  + Creates hormones needed to maintain healthy pregnancy
* Sex differences in the placenta:
  + Genotype of the placenta is same as the fetus
  + Sex can lead to different health outcomes and different risk for pregnancy complications
* Sex Chromosomes:
  + Mostly XX and XY, but several other genotypes possible
* RNAseq:
  + Used to study genes that are transcribed
  + Process: (a) generate cDNA, (b) sequence, (c) count reads that match to each gene
* Basis steps of RNA data processing
  + Quality control
  + Trimming
  + Alignment (sex chromosome complement informed)
  + Differential gene expression
* Research Aims of this study
  + Effect of changing trimming parameters on identifying differentially expressed genes

List successful communication with instructors and classmates

* Posted to Slack to introduce myself
* Used Slack to ask other students in the class if they were seeing what I am seeing when I connect to RStudio

**Challenges and how you addressed them**

Specific challenges for the week

* Lots of reading material for this week
* Found it easy to connect to Agave since I had done this for another course, but RStudio was new for me

Approaches for addressing the challenges

* Read about 3 sections every day to not feel overwhelmed
* Followed the instructions step by step and checked in with classmates on Slack when I felt unsure

**Goals for the next week**

How do current module’s objectives relate to next module

* Now that we have learned how to connect to RStudio on Agave, we will start using it to run R code
* This week talked about how the data was generated and processed, next week will talk about how this makes for a real experiment

What are the goals of the next module

* Learn how to design an RNAseq experiment and prioritize the results
* Learn how to run and understand R code
* How to search for useful R packages
* How to read a scientific article

Content from this module to revisit or learn more about

* I still don’t totally understand how RNAseq works, seems complicated
* I have never programmed in R before so I will watch a few intro videos on YouTube if I have time

**PROGRESS REPORT - EXAMPLE TWO**

**Name**: Trainee McTrainerson  
**Date Submitted**: March 3, 2025

**Module**: Module 3

**Accomplishments**

Concepts/coding learned

* Normalization
  + Puts the output from each sample on the same range so we can compare samples to each other more accurately and precisely
* MDS plots
  + Used to look at what samples have more similar gene expression patterns
* Voom transformation
  + Adjusts for there being more noise for genes that have low expression values
* Linear modeling to compare two groups of samples
  + We are comparing female placenta to males so that will be in our contrast matrix
  + After we run, we will get p-values and fold changes for all the genes that so we can figure out which genes change the most from females to males
* Different plots we can use to show the difference in gene expression for the significant genes
  + Box plot
  + Violin plot
  + Jitter plot
  + Combinations of those
* How to run the differential expression code (DE\_Pipeline\_UntrimmedData.Rmd)

List successful communication with instructors and classmates

* I had to go to office hours to get help running the code
* I posted some errors I was getting on the Slack channel and a few people responded to help me figure them out

**Challenges and how you addressed them**

Specific challenges for the week

* I have never coded in R before and it is really hard
* I feel like I kind of understood what I was reading in the template code, but I got an error every time I changed or added something

Approaches for addressing the challenges

* I tried to use the tips in the Professional Development section to fix the errors
* I asked for help on Slack for the ones I couldn’t figure out

**Goals for the next week**

How do current module’s objectives relate to next module

* This time we ran the data without any trimming, but I got assigned a trimmed data set to run next week
* Once we get output, we are supposed to figure out how they are different from the output we got this week

What are the goals of the next module

* Run the differential expression code on my trimmed data set
* Learn about figures we can make to show what’s the same and what’s different
* Turn in the output from my trimmed data

Content to revisit or learn more about

* I feel like I should read about trimming again so I know what I’m doing with my assignment next week
* I didn’t know what some of the functions in the R code were supposed to do so I will Google them to see if I can understand them better

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## Examples of statements by section

This section is meant to help you get an idea of the types of statements that go into the sections of your project report. We want you to summarize the important aspects of your work from week to week and reflect on achievements and challenges. Communicating progress and challenges with supervisors is an important part of any job but is especially important in research because you generally have to carve your own path forward on your specific projects. Furthermore, being able to summarize your work properly and quickly is a skill used in interviews, oral presentations, manuscript and grant writing, and more. We hope that by the end of this course, it will feel easier to summarize and present your progress in a way that you feel confident with.

Below we have given some examples of the type of statements that are to go into each section of your progress report. We want you to be clear, concise, and honest. Try to stick with the target word counts, as they will force you to state only what is critical to how you are advancing your research project and your experiences doing the necessary work. The instructors that read your progress reports are likely to be able to give you feedback on what you report, but make sure the progress reports are statements that address achievements, challenges, and goals and are not you simply wondering what to do next (if you have questions, ask instead at office hours, Slack, etc).

### Example Accomplishments (what have you learned or made):

1. My main accomplishment for this week was to read about how the placenta works, both by watching videos and by reading papers. I started with the placenta sex differences manuscript and worked my way out by reading background materials on the concepts I didn’t know anything about.
2. This week I got myself oriented with the existing code for analyzing differential gene expression in the placenta. I got an account with the supercomputer, read various getting started documents on the research computing website, and looked at the code available in the lab shared drives and GitHub repositories.
3. This week I met with new potential collaborators to discuss research aims for a new project. We discussed what the goals of the project were, the design of the planned experiments, the data has been collected so far, and how we are planning to run the analysis. The goal of the project is to apply the same techniques used to analyze sex differences in placenta gene expression to a set of new placenta samples that have been collected at a new biobank.
4. This week I started writing up my results to start working on a manuscript for publication. I discussed the overall outline of the paper with Dr.Wilson so I had a better idea of what to include. I went back through data directories and old progress reports to pull out the figures for the ideas we listed. Then I started to think about how to order them and talk about them in a way that makes sense.

### Example Challenges (what you may have struggled with this week):

1. I am having a hard time with learning R. This is my first real experience with coding and I feel like I am getting an error with every line of code I write. I am trying to solve this problem by doing the tutorials recommended in the learning materials, but it’s taking so much time to get through.
2. When I was trying to run an Rmd that was used to generate some figures for a previous manuscript, I found that my output files were in the wrong format and got several errors, even though it seemed like the script was meant to take in those output files. It seems that the scripts used to generate the data have changed some so I have to go through and make changes to the script for making the figure to match those changes. The code did not have that many comments so it took time to figure out all the steps and variables.
3. When I was watching the video on how to do linear modeling, it included a lot of statistics, which I don’t have a solid background on. I had a lot of trouble understanding all the terms the video was using and when I tried to look them up, the descriptions had a lot of math which I didn’t understand. To help myself, I am going to send a message on Slack to see if anyone else in the class has a statistics or math background. If no one does, I will ask the TAs to see if they can explain it in a different way or maybe even let me know which stuff is the most important to focus on.
4. This week was challenging because I feel like everything in the learning modules took a lot longer than I thought they would and it’s hard to balance with everything else. Even after reading the passages, I feel like I have to reread them when I am working through the code so that I can understand the output the functions are giving. To solve this, I took a look at some of the later modules to get an idea of what the most important concepts are and read those more carefully.
5. This week went pretty smoothly since I used the supercomputer and did a little bit of programming in R for another course I took at ASU. I was able to get through most of the material pretty quickly. I had time to help a few of the others in class because I was able to see some of the problems with the code they posted on Slack and quickly told them what they needed to fix.
6. I am having trouble this week finding time to get together with the small group of people working on the same data set. I feel like I really benefit from going over the results with them, but we are all on different schedules. To try to solve this problem, I made a little whenisgood page to see if we could find a time that worked for all of us. We are trying to save that time slot for discussing how to interpret or integrate the results we are getting and keep stuff like coding errors for Slack and email.

### Example Goals (what do you want to do next):

1. My goal for next week is to make a summary of the two papers we are supposed to read for class. I read them each once this week, but I want to make sure that I understand them well enough to present to others.
2. My goal for this week is to read more about RNAseq data processing. I feel like I understand the actual technique that is being done to get the transcripts from the cells, but I don’t understand how RNAseq data actually tells you how genes work in the placenta.
3. Since I was able to run the differential expression pipeline this week, my goal for next week is to run that on a new data set.
4. My goal for this week is to put together the figures I want to include in my report. Once I get those assembled in the right order, it should be easier to write about them next week.