Lab 3 Rubric:

Section	Excellent	Good	Acceptable	Needs	Not Done
				Improvement	
1:	Correctly identifies			Incorrectly	Has no answer for
Understanding the	the following:	the following:	the following:	identifies the	at least 3 of these
data	Sequenced on	Sequenced on	Sequenced on	following:	questions.
	Illumina HiSeq	Illumina HiSeq	Illumina HiSeq	Sequenced on	
	2500 by Seoul	2500 by Seoul	2500 by Seoul	Illumina HiSeq	
	National	National	National	2500 by Seoul	
	University Plant	University Plant	University Plant	National	
	Developmental	Developmental	Developmental	University Plant	
	Genetics	Genetics	Genetics	Developmental	
	Laboratory,	Laboratory,	Laboratory,	Genetics	
	Department of	Department of	Department of	Laboratory,	
	Plant Science.	Plant Science.	Plant Science. Does	Department of	
	Identifies that	Identifies that	not identify that	Plant Science	
	these are paired	these are paired	these are paired	The conditions are:	
	reads.	reads.	reads.	Control, aba,	
	The conditions are:	The conditions are:	The conditions are:	saline, and dry.	
	Normal conditions,	Normal conditions,	Control, aba,	Does not fully	
	ABA (plant	ABA (plant	saline, and dry.	describe these	
	hormone) present,	hormone) present,	Does not fully	conditions.	
	high saline	high saline	describe these	The genes are	
	conditions, and	conditions, and	conditions.	ros1-3 and <i>dml2;3</i> .	
	dehydration	dehydration	The genes are	Doesn't identify	
	conditions.	conditions. Does	ros1-3 and dml2;3.	the function of the	
	Describes the full	not fully describe	Identifies that	genes.	
	conditions for	these conditions.	these are DNA		
	these.	The genes are	demethylases.		
	Identifies the	ros1-3 and dml2;3.			
	genes as ROS1 and	Identifies that			
	DML2&DML3.	these are DNA			

	These are all DNA	demethylases.			
	demethylases. And				
	involved in the				
	gene silencing.				
2:	Explains that we	Explains that we	Explains that we	Does not explain	Does not answer 3
Mapping the Reads	used the ENSEMBL	used the ENSEMBL	used the ENSEMBL	that we used the	or more of the
	transcriptome as it	transcriptome as it	transcriptome as it	ENSEMBL	questions.
	is well annotated,	is well annotated,	is well annotated,	transcriptome as it	
	and meant we	and meant we	and meant we	is well annotated,	
	didn't have to	didn't have to	didn't have to	and meant we	
	build it ourselves,	build it ourselves,	build it ourselves,	didn't have to	
	which takes a long	which takes a long	which takes a long	build it ourselves,	
	time.	time.	time.	which takes a long	
	Identifies benefits	Identifies benefits	Identifies benefits	time.	
	for using an	for using an	for using an	Identifies benefits	
	annotated	annotated	annotated	for using an	
	transcriptome and	transcriptome and	transcriptome and	annotated	
	for using a de novo	for using a de novo	for using a de novo	transcriptome and	
	transcriptome.	transcriptome.	transcriptome.	for using a de novo	
	Gives supported	Gives not well-	Gives incorrect	transcriptome.	
	explanations of	supported	explanations of	Gives incorrect	
	when you want to	explanations of	when you want to	explanations of	
	build your own	when you want to	build your own	when you want to	
	transcriptome and	build your own	transcriptome and	build your own	
	when you don't.	transcriptome and	when you don't.	transcriptome and	
	Examples include	when you don't.	Does not identify	when you don't.	
	that you want to	Examples include	that there are	Does not identify	
	build your own	that you want to	reads with no	that there are	
	when one doesn't	build your own	transcript, and that	reads with no	
	exist, or when you	when one doesn't	these are likely	transcript, and that	
	are trying to	exist, or when you	errors or	these are likely	
	identify new	are trying to	contamination.	errors or	
	splicing events or	identify new	Can not identify	contamination.	

	notal gonos	colicing overtees	that it would take a	Can not identify	
	new genes.	splicing events or		Can not identify that it would take a	
	Identifies that	new genes.	few hours.		
	there are reads	Identifies that	Does not identify	few hours.	
	with no transcript,	there are reads	that running these	Does not identify	
	and that these are	with no transcript,	on a cluster where	that running these	
	likely errors or	and that these are	they can be run on	on a cluster where	
	contamination.	likely errors or	more cores could	they can be run on	
	Should identify	contamination.	speed it up.	more cores could	
	that it would take a	Should identify		speed it up.	
	few hours, but	that it would take a			
	could be sped up	few hours.			
	by running these	Does not identify			
	on a cluster where	that running these			
	they can be run on	on a cluster where			
	more cores.	they can be run on			
		more cores could			
		speed it up.			
3: Analyzing the	They identify 2	They identify 2	They identify 2	They identify 2	They identify 2
data	groups in PCA1/2	groups in PCA1/2	groups in PCA1/2	groups in PCA1/2	groups in PCA1/2
	and 4 in PCA 2/3.	and 4 in PCA 2/3.			
	Identify that in 1/2	Does not discuss			
	it is the presence	why these			
	or absence of	or absence of	or absence of	or absence of	separations arise.
	osmotic stress and	osmotic stress and	osmotic stress and	osmotic stress and	•
	that in 2/3 it is the	Identifies fewer			
	4 different growth	4 different growth	4 different growth	4 different growth	than 5 genes. Does
	conditions.	conditions.	conditions. Does	conditions. Does	not describe the
	Indicate that the	Describe that	not discuss why	not discuss why	size of the change
	largest difference	osmotic stress	these separations	these separations	and the level of
	in gene expression	conditions have	arise.	arise.	significance of the
	is the conditions	similar changes as			change. Does not
	they are grown in,	compared to	Identifies 5 genes.	Identifies 5 genes.	describe how these
	not the genetic	unstressed or	Describes the size	Does not describe	genes are related

4. Interpreting the	background. Also, osmotic stress conditions have similar changes as compared to unstressed or stressed by hormones. Identifies 5 genes and explains why they chose these. Describes the size of the change and the level of significance of the change. Describes how these genes are related to each other (same or different direction of change). Graphs are present and annotated clearly with a clear caption.	stressed by hormones. Identifies 5 genes. Describes the size of the change and the level of significance of the change. Describes how these genes are related to each other (same direction of change). Graphs are present and annotated thought not clearly with an unclear caption.	of the change and the level of significance of the change. Describes how these genes are related to each other (same direction of change). Graphs are present though not annotated or with a caption.	the size of the change and the level of significance of the change. Does not describe how these genes are related to each other (same direction of change). Graphs are present though not annotated or with a caption.	to each other (same direction of change). Graphs are present though not annotated or with a caption.
4: Interpreting the results	Identifies their top 5 genes correctly. Discusses the biological role of these genes. Reasons from the functions why they	Identifies their top 5 genes correctly. Discusses the biological role of these genes. Does not reason from the functions why	Identifies their top 5 genes correctly. Discusses the biological role of these genes superficially or incorrectly. Does	Identifies their top 5 genes incorrectly. Discusses the biological role of these genes superficially or	Identifies their top 5 genes incorrectly or not at all. Does not discuss the biological role of these genes. Does not reason

	might be influenced by osmotic stress. Discusses how the data supports their reasoning. Describes an effective a way to test their hypothesis experimentally or computationally. Appropriate figures are provided with annotations and clear captions.	they might be influenced by osmotic stress. Discusses how data supports reasoning. Describes a watest their hypothesis experimental computations that is not appropriate. Appropriate figures are provided with annotations a clear captions.	s. w the s their vay to ly or ally	not reason from the functions why they might be influenced by osmotic stress. Does not discuss how the data supports their reasoning. Describes a way to test their hypothesis experimentally or computationally that is not appropriate. Appropriate figures are provided without annotations and clear captions.	not re the fu they r influe osmot Does r how t suppor reasor test th hypot exper compor that is appro	ibes a way to neir hesis imentally or utationally on priate. opriate s are not	from the functions why they might be influenced by osmotic stress. Does not discuss how the data supports their reasoning. Does not propose a way to test their hypothesis experimentally or computationally. Appropriate figures are not provided.
Overall	Written clearly in paragraph form. Writing has a flow. Scientific vocabulary is correctly used.		Writir	Written in paragraph form. Writing is stilted. Scientific vocabulary is used incorrectly.		Written in bullet form. Writing is stilted. Scientific vocabulary is used incorrectly.	
Citations				All sources and some tools used are cited.		No citations	