

GENETICS 302 LABORATORY ACTIVITIES page 9

Course #: 34-BIOL-302-001 Winter Quarter David B. Fankhauser, Ph.D.
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As we successfully master the prerequisite skills, we will perform the following experiments.

Note that using the PCR machine requires some lab time outside of regular lab hours.

Quizzes are administered in the last 45 minutes of the lab period. Late Lab Notebook = -10%/lab...

Tues	Lab Activity	Handouts, Protocols	Illustrations, Data
1/3	Intro to Lab Begin seed and onion sprouts for next week Isolation of DNA from thymus	2nd NBGrd Sheet fr CellBio Genetics Lab Activities Lab Notebook Proc, [Format Contact Paper, NB Illust'ns.] Sprouting Seeds DNA isolation from thymus	Annotated page format Jar set up for sprouting Stages of DNA isolat'n
1/9	MONDAY AM!: Harvest Root Tips from sprouts	Root Tip Harvest ... Carnoy Fix., labeling tubes	Bring in, show your sprouts for points.
1/10	Plant chromosomes in root tips from sprouted seeds and onion Quiz 1	Dissect'n Scope Care & Use BinocMicrosCare, Use&Eval Use of Oil Immersion Obj. Prep of Feulgen Stain Visualizn Root tip chromsme	Dissecting scope stained root tips Root tip chromos. I Root tip chromos. II
1/17	Animal chromosomes: giant polytene chromosomes in <i>Drosophila</i> larvae	<i>Drosophila</i> Salivary Gland Chromosomes	<i>Drosophila</i> larva Salivary gland illust'n Polytene chromosomes
1/24	Practice loading gels Electrophoresis of DNA NOTEBOOKS DUE Wed Jan 25	Electrophoretic Separation of DNA Fragments ethidium bromide	microcentrifuge & tube Gel reag & plate prep Gel diagram after run EPh apparat & gel comb
1/31	Returned Notebooks discussed DNA Extraction from buccal cells Use of X² test to evaluate data (In computer lab)	(1 st NBGS → notebook) DNA Prep from buccal cells Importance of Sample Size X ² Probability Table	Notes on DNA extr'c'n X ² calculations, conclns
2/7	DNA digestion: Endonucleases MIDTERM, 3:00-5:00	Endonuclease Digstn, DNA	rxn tube, DNA calc'ns DNA dig'n tube setup
2/14	Intro to PCR machine Polymerase Chain Reaction: Your DNA with D1S80 primers	Polymerase chain reaction protocol	Steps of themocycling Thermocycler
2/21	Refinement of PCR technique Quiz [NOTEBOOKS DUE Wed. 2/22]	PCR refinements Second set of primers?	
2/28	Returned Notebooks discussed Measuring β galactosidase in bacterial cultures	2 nd NBGS → notebook β Galactosidase in Cells	ONPG hydrolysis βgal'ase assay setup tbl
3/7	Gene regulation: induction of the lactose operon	Gene regulation: Induction of <i>lac</i> Operon in <i>E coli</i>	lactose operon β galase dereprsn grph Collect lac-grown <i>Ecoli</i> βgalase SA in <i>E coli</i>
Quiz 4	FINAL EXAM: (tentative) Monday 14 Mar. 1:30-3:30		