

Hong Kong ABE Lab Sequence and Estimated time

Labs with estimated experiment time		40-min lesson
Chapter 1 Learning Basic Laboratory Skills		2 or 1+1
Lab 1.1: Basic Pipetting and Serial Dilution	40 -50 mins	
Lab 1.2: Gel Electrophoresis – Dye Separation	30 -40 mins + Wait time: 15 mins (Gel run)	
Chapter 2 Identifying a Recombinant Plasmid with <i>rfp</i> Gene		1 + after class + 1
Lab 2.1: Checking Plasmid with PCR (Plasmid A and A-<i>rfp</i> provided)	20-30 mins + Wait time: 120 mins (PCR run)	
Lab 2.2: Gel Electrophoresis — Confirmation of PCR Products	20 mins + Wait time: 20 mins (Gel run)	
Chapter 3 Constructing Recombinant Plasmid with <i>rfp</i> Gene		For Gel Viewing only: 2 + after class + 1 For Transformation: (1+ after class) + (1+ after class) + 1
Lab 3.1: Cutting the Two Plasmids (Restriction Digestion) (Plasmid K and A provided)	10-15 mins + Wait time: - 15* or 60 mins restriction cutting & - 20 mins enzyme inactivation & - 15 mins cooling down - (*fast digestion for gel viewing only; 60 mins digestion for bacterial transformation)	
Lab 3.2: Putting the <i>rfp</i> Gene into the Plasmid (Ligation)	20 mins + Wait time: - 120 mins* or room temperature overnight - (*fast ligation for gel viewing only; overnight incubation for bacterial transformation)	
Lab 3.3: Gel Electrophoresis — Confirmation of Digestion and Ligation Products	20 mins + Wait time: 20 mins (Gel run)	
Chapter 4 Creating Genetic Modified Bacteria with <i>rfp</i> Gene		
Lab 4: Transforming Bacteria with Recombinant Plasmid (Ligation products/ Plasmid A-<i>rfp</i> provided)	70-80 mins + Wait time: - 1 day plate incubation (16-24 hours)	2 + after class

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Lab combination	Lab sequence	Number of 40-min lessons needed	Problems
A	<i>Lab 1 → Lab 2</i>	<i>4 or 5</i>	<i>No digestion and ligation, no GM bacteria made</i>
B	<i>Lab 1 → Lab 3</i>	<i>5</i>	<i>No PCR, no GM bacteria made</i>
C	<i>Lab 1 → Lab 2 → Lab 4</i>	<i>6 or 7</i>	<i>No digestion and ligation</i>
D	<i>Lab 1 → Lab 3 → Lab 4</i>	<i>7</i>	<i>No PCR</i>
E	<i>Lab 1 → Lab 2 → Lab 3 → Lab 4</i>	<i>9</i>	