

Biotechnology – 2001 - 2002 – Semester One

Shorewood High School

Instructors – Connie Kelly and Tracy Stoops

connie.Kelly@shorelineschools.org tracy.stoops@shoreline.schools.org

Dates	Unit	Content	Skills/Labs
9/4 - 9/21	I – Introduction to Biotechnology	Learning Styles Leadership Record Keeping and Notebooks Lab Safety Bacteria identification and structure Requirements for bacterial growth	Working with different styles Uses of Biotech Making Agar Gram stain Sterile technique Use of autoclave
9/24 – 10/9	II – Biotechnology - Microbiology	Rate of bacterial growth How to isolate bacteria Standard curves Use of spectrophotometer Bacterial colony identificaiton	Microbial numbers Streak plating Determining microbial numbers from a spec. Isolating and identifying unknown bacteria.
10/11– 11/2	III – Transformation	Plasmid DNA Recombinant DNA and transformation Use of restriciton enzymes Ethics of transformation in foods and animals Plasmid mapping Transcription Control Operons	Use of micropipets Lab set up including controls Defining ethical issues Electrophoresis (review) Lab flow charts Mathematical analysis of data
11/5 – 11/ 21	IV – Immunology	Immune system and antibody production Ouchterlony plates ag/ab complexes Emerging and reemerging diseases	Immune system response to diseases Presentations (of diseases) Gathering data
11/26 –12/14	V – Immunology as a tool	HIV Background Development of the immune system Central Dogma review	ELISA Immunoassay Quantitative ELISA Western Blot
12/17 - 1/11	VI – GFP Studies & Drug Development and marketing	Protein Isolation Purification Marketing Protocols and Bioethics Immupop Lab (simulation of product to market)	GFP Protein Purification FDA & Marketing
1/14 - 1/25	VII – Semester One Practical Exam	Identification of Unknown Plasmid	Microbiology Techniques Transformation Plasmid Isolation DNA Restriction Digest & Analysis

Biotechnology – 2001-2002 – Semester Two

Shorewood High School

Instructors – Connie Kelly and Tracy Stoops

connie.Kelly@shorelineschools.org tracy.stoops@shoreline.schools.org

Dates	Unit	Content	Skills/Labs
1/28 – 2/15	I – Expo Project Review	Student Biotech Research Project Presentations	Completion of independent studies & research
2/25 – 3/7	II – Proteins	Protein Conformation Proteomics	Fish Protein Lab
3/8	Student Biotech Expo 2001 – Shoreline Center		
3/11 – 4/5	III – PCR & Forensics	PCR Techniques Forensic Applications – Los Desaparecidos Mitochondrial DNA Identification of Allelic Variation	Alu PCR Lab Mitochondrial PCR Lab VNTR PCR Lab
4/8 – 4/26	IV – DNA Sequencing	Sequencing Techniques Human Genome Project Genomic Studies Data Banks	Sequencing Lab BLAST Search Patent Law and Ethics
4/29 –5/17	V – Genetic Engineering	Techniques of Genetic Engineering Restriction and Ligation Lac Operon	Recombinant Plasmids DNA Hybridization Southern Blot
5/20 – 6/7	VI – Genetic Diseases	Ethics Genetic Counseling Diagnostics Evolution	Web Databases HeLa Lab Independent Research
6/10- 6/21	VII – Journal Research	Primary Research Reading Technical Diagnostics	Presentation Techniques Evaluation of reliable sources Scientific terms and vocabulary
Ongoing Careers Unit		Research Settings Biotechnology Career Options Grants and Funding Procedures Scholarship Information Short-, Mid-, Long-Term Career Objectives	Resumes Interviews Lab Skills Checklist Applications