

SBI4U METABOLIC PROCESSES Unit Checklist

Name: _____

Mastery Checks may be attempted more than once and are not considered complete until $\geq 70\%$ is achieved.

Notes and activities will be checked for completion & corrections.

Topic	Objective(s)	Key Concepts	Approx. # classes	Activities	Mastery Check Min 75%
1	Intro to Cellular Respiration & Types of Reactions: Understand how processes fit together: Glycolysis, Pyruvate Oxidation, Krebs Cycle & ETC Identify & describe the 4 main types of biochemical reactions	<ul style="list-style-type: none"> - ATP input and output - Energy Carriers - Anabolic - Catabolic - Redox - Neutralization 	2		<input type="checkbox"/> Got It!
2	Glycolysis & Pyruvate Oxidation: Explain the chemical changes and energy conversions occurring Identify molecules and their roles throughout the processes	<ul style="list-style-type: none"> - Anaerobic in cytoplasm - Role of NAD⁺/NADH - Energy invest/harvest - Net 2 ATP - Oxidation of pyruvate - Names of molecules 	1		
3	Kreb's Cycle / Citric Acid Cycle: Explain the chemical changes and energy conversions associated with Kreb's Cycle Identify molecules and their roles throughout the process	<ul style="list-style-type: none"> - Oxidation reactions - Production of NADH/FADH₂ - Names of molecules 	2		<input type="checkbox"/> Got It!
4	Electron Transport Chain: Explain the chemical changes and energy conversions associated with the E.T.C. Identify molecules and their roles throughout the process	<ul style="list-style-type: none"> - Matrix & cristae - Movement of electrons - Coupled reactions - Redox reactions - Coenzymes - Role of O₂ - Electrochemical gradient & ATP 	2		
Aerobic Respiration Molecule Quiz					
5	Regulating Cellular Respiration & Alternative Pathways: Explain the process of using proteins and lipids as energy molecules and how they fit into the chemical processes	<ul style="list-style-type: none"> - Calculating ATP - Muscle fatigue, BMR, activity level... - Deamination - β-oxidation 	2		<input type="checkbox"/> Got It!
6	Anaerobic Respiration: Explain the chemical changes and energy conversions associated with anaerobic cellular respiration	<ul style="list-style-type: none"> - Fermentation - Recycle NAD⁺/NADH - Lactic Acid - Ethanol 	2		
Cellular Respiration TEST					
7	Photosynthesis – Light Reactions & Calvin Cycle: Explain the chemical changes and energy conversions associated with photosynthesis Describe, compare & illustrate the matter and energy transformations occurring during cellular respiration and photosynthesis	<ul style="list-style-type: none"> - Chloroplast structure, chlorophyll, transpiration, leaf structure - Thylakoid, membranes & stroma - Pigments & visible spectrum - Light & electrons - Z-scheme, Cyclic & Non-cyclic ETC - Role of H₂O & O₂ - RUBISCO - RuBP & Redox - Carbon Fixation 	3		<input type="checkbox"/> Got It!
8	Photosynthesis – Environment & Light Curves: Explain how environmental conditions affect the chemical changes and energy conversions of photosynthesis and photorespiration.	<ul style="list-style-type: none"> - Light Curves - Irradiance - Stomata - Climate change & effects on chemical processes - Light saturation 	2	Lab	
9	Photosynthesis in C₄ & CAM Plants: Explain how plants have adapted and have altered the chemical changes and energy conversions associated with photosynthesis	<ul style="list-style-type: none"> - Alternative forms of carbon fixation - C₃, C₄ & CAM Plants - Photorespiration - Bundle sheath, mesophyll, - PEP carboxylase 	1		<input type="checkbox"/> Got It!
Photosynthesis & Comparisons TEST					

Metabolic Processes Terms to Know

- 1,3-Bisphosphoglycerate
- 1,3-bisphosphoglycerate
- 2-Phosphoglycerate
- 3-Phosphoglycerate
- Absorption
- Acetaldehyde
- Acetyl-CoA
- ADP
- Aerobic
- Amino Acids
- Anaerobic
- Antenna Pigment
- Anthocyanins
- ATP
- ATP Synthase
- b6-f Complex
- Bundle-Sheath
- C3 Plant
- C4 Plant
- Calvin Cycle
- CAM Plant
- Carotenoids
- Chemical Energy
- Chlorophyll
- Chlorophyll a
- Chlorophyll b
- Chloroplast
- Citrate
- CO₂ Limited
- Coupled Reaction
- Cyclic Electron Flow
- Cytosol
- Light Independent Reactions
- Light Limited
- Light-Compensation
- Deamination
- DHAP
- Dihydroxyacetone-Phosphate
- Electron Transport Chain
- Electronegativity
- Energy Return
- Ethanol
- FAD⁺/FADH₂
- Fatty Acids
- Fermentation
- Ferredoxin
- Fructose-1,6-Bisphosphate
- Fructose-6- Phosphate
- Gluconeogenesis
- Glucose-6- Phosphate
- Glyceraldehyde- 3-Phosphate
- Glycerol
- Glycolysis
- Guard Cell
- Inter-membrane
- Investment
- Irradiance
- K⁺ Diffusion
- Kreb's / Citric Acid Cycle
- Lactate
- Lactic Acid
- Lactic Threshold
- Light Dependent Reactions
- Light Independent Reactions
- Light Limited
- Light-Compensation Point
- Light-Saturation Point
- Magnesium
- Malate
- Malic Acid
- Mesophyll
- Mitochondria
- Mitochondrial Matrix
- NAD⁺/NADH
- NADP Reductase
- NADP⁺/NADPH
- Non-Cyclic Electron Flow
- Oxaloacetic Acid
- Oxidative Phosphorylation
- P680
- P700
- PEP Carboxylase
- Phosphoenolpyruvate
- Phosphofructokinase
- Photons
- Photophosphorylation
- Photorespiration
- Photosynthesis
- Photosystem
- Phytol tail
- Pigment
- Plastocyanin
- Plastoquinone
- Porphyrin Ring
- Primary Electron Acceptor
- Product
- Pyruvate
- Pyruvate Oxidation
- Reactant
- Reaction Center Chlorophyll
- Redox
- Respiration
- Ribulose bisphosphate
- RUBISCO
- RuBP Carboxylase
- Spectrum
- Stomata
- Stroma
- Substrate-level Phosphorylation
- Sugar Splitting
- Thylakoid Interior
- Transpiration
- Vacuole
- VO₂ Max
- Wavelength
- Xanthophylls
- β-Oxidation

Mastery Checks:

- May be attempted more than once within Mastery Check "window"
- Extra practice must be completed & shown to get another attempt
- Mastery is considered **≥ 75%**

- ✓ Not yet **≥ 75%** but 2 attempts completed
- ! Overdue / Late
- ✗ Not Done
- Incomplete (one attempt < 75%)

OCTOBER 2023						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	15	16	17	18	19	20
	22	23	24	25	26	27
	29	30	31	1	2	3

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NOVEMBER 2023						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	1	2

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