The Visual Molecular Misconception Decision Tree - Asset Inventory

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	Item	Notes	Program	Draft files	Final files
Background:	Cell Membrane		Molecular Maya	MRP_Animatics	
	Cell with Nucleus		Molecular Maya		
	Cell with vesicles		Molecular Maya		
	Background with dense molecule environment		C4D		
	Background with sparse molecule environment		C4D		
	Background with permeable membrane		C4D		
Molecules:	Receptors	Need 3, distinctive looking molecules with binding sites that are obvious to complementary molecules. Could be color coded if sites are not obvious.	PDB, C4D	MRP_Animatics	
	Complementary Molecules	Need 3, color coded to match receptors	PDB, C4D		
	Complementary Molecule with small molecules attached to it.		PDB, C4D		
	Enzyme molecule with obvious substrate site x 2	One large, one small	PDB, C4D		

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	Complementary large molecule for enzyme			PDB, C4D		
	Complementary small molecule for enzyme			PDB, C4D		
	Water molecule			C4D	MRP_Animatics	
	Dye molecule			C4D		
Animations:	"An extracellular molecule tries to move towards a complementary receptor" x 2	True	Assets needed: Cell mb, receptors, small complimentary molecules. Molecules will appear to move towards its own receptor actively			
		False	Assets needed: Cell mb, receptors, small complimentary molecules. Molecules will approach any receptors indiscriminately	C4D		
	"Assuming there are several instances of the complementary receptor present, an extracellular molecule tries to move towards" x 3	One specific predetermined instance of the complementary receptor	Assets needed: Cell mb, receptors, small complimentary molecules. All small molecules approach complementary receptor and bind	C4D		
		Any of the complementary receptor instances that are present	Small molecules approach complementary receptor and some will try to bind receptors already filled.	C4D		
		Whichever instance of the complementary receptor is closest	Small molecules approach the closest complementary	C4D		

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			receptor and bounce off to travel to nearby receptors			
	"An extracellular molecule knows the physical location of its receptor" x 2	True	Small color coded molecule will travel through other molecules to reach to its complementary color coded receptor, in a fairly straight path. Molecule and receptor will pulse with sound and glowing colors in synchronization.	C4D	MRP_Animatics	
		False	Small color coded molecule will travel through other molecules to reach to its complementary color coded receptor only to travel off screen. Molecule will move in a more random motion, in various directions.	C4D		
	"Based off your previous answer, how an extracellular molecule know the location of its receptor?" x 3	It can sense the receptor from a distance	Assets needed: Cell mb, nucleus environment, receptors, small complimentary molecules. Color coded receptors will signal in radio waves + sound, small complementary molecules will travel towards receptors after few rounds of "radio wave" signaling	C4D		
		It has hard-wired knowledge	Complementary molecules will travel in a predetermined path towards color coded receptors. Predetermined path will be depicted with a glowing dotted	C4D		

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			line from off the screen leading to receptors.			
		It receives a message from else where	Signaling from within the cell in form of colored particles radiating from nucleus region. Small molecules will travel towards complementary receptor in presence of small particles	C4D		
		It can sense the receptor when it is close to it	Small radio waves radiating from receptors. Small color coded receptors will be traveling in random motion until it reaches within range of radio waves, and then it will snap to receptor.	C4D		
	"What is the mechanism of an extracellular molecule's movement towards a receptor"	The extracellular molecule propels itself	Color coded small molecules will be moving towards receptor with interval propelling motion. Nearby unrelated molecules (signified by desaturation) will be pushed aside while it travels.	C4D		
		The extracellular molecule is released from its source with the correct initial trajectory	Scene will be set up similar to a pre-synaptic neuron and post synaptic neuron. Vesicles containing color coded small molecules will be released in direction towards post synaptic neuron mb, with complementary receptors	C4D		

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		The extracellular mole uses other helper molecules to be carried closer to the receptor	Other small molecules will attach to complementary molecule. Once attached, they will move in a motion such that it propels the molecule towards its complementary receptor	C4D		
		The extracellular molecule collides randomly with other molecules	Color coded small molecule will move towards its complementary receptor via random collision with all surrounding molecules, moving in a sporadic manner.	C4D	MRP_Animatics	
	"An extracellular molecule can change direction on its own"	True	Vesicle containing 1 complementary will merge with cell membrane as small molecule travels towards off screen. Once the receptor is exposed to the extracellular matrix, molecule will shift direction towards the receptor.	C4D		
		False	Vesicle containing 1 complementary will merge with cell membrane as small molecule travels towards off screen. Once the receptor is exposed to the extracellular matrix, molecule will continue to move off screen.	C4D		
	"A large molecule has a more direct path of motion, whereas a small molecule has a more random path"	True	Two color coded large enzyme type molecules and 1 small color coded DNA type molecule will be in environment. All	C4D		

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			three molecules have binding site clearly indicated. The two large molecule will move less erratically towards each other for a binding event, while the small molecule moves randomly and off screen.			
		False	In this instance, all molecules will be moving in a random and sporadic movement that does not result in a binding.	C4D		
	"A molecule's path of motion is more direct when it has been activated, whereas its path is more random when it is inactive"	True	Small molecules will be moving in a sporadic movement until it binds to an enzyme molecule, where it is activated (changes color,) and travels towards its complementary color coded receptor in a direct path.	C4D		
		False	Small molecules will be moving in a sporadic movement until it binds to an enzyme molecule, where it is activated (changes color,) and continues to travel sporadically until it binds to a complementary receptor (or does not)	C4D		
	"Inside a cell, large molecules are densely crowded so much so that the average distance between two macromolecules is typically less than the width of a single macromolecule"	True	Environment will be depicted with various sized molecules. Large molecules will be numerous in that the distance will between them will be less than 1 large molecule. Spaces in between will be fill with	C4D		

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			smaller molecules. A ruler guideline might be included to indicate distance. Movement of molecules will create constant collisions.			
		False	Environment will be depicted with various sized molecules. Large molecules will be positioned sparsely with smaller molecules also sparsely surrounding them. Molecules will be collide less due the sparser environment.	C4D		
	"Inside a cell, empty space is not a factor in the overall direction of diffusion of water and other molecules"	True	Color coded semi permeable membrane will be placed in scene and clearly labeled. One side will be sparely populated with color coded molecule but highly populated with water molecules. Other side will be densely populated with color coded molecules and no water molecules. Color coded molecules will travel through the mb to the lower concentration until equilibrium is reached.	C4D		
		False	Same environmental set up, however, there will be no movement of molecules.	C4D		
	"In the case of simple diffusion across a permeable membrane, once solute	True	Initial set up will be 2 types of small molecules separated on each side of scene by a semi	C4D		

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	molecules reach an equilibrium, they cease to cross the membrane"		permeable membrane. Molecules will travel through membrane until equilibrium is reached, and then molecules will only move contained on each side.			
		False	Same environmental set up, however during diffusion stage, some molecules will travel backwards even prior to equilibrium. After equilibrium is established, molecules will move randomly, and cross membrane if it is near it and traveling towards that direction.	C4D		
	"A drop of dye is placed in some water The water, activing as a solvent, diffuses into the dye in the same way as the dye, acting as a solute, diffuses into the water"	True	A large amount of color coded dye molecules will be released into an environment of water molecules. The dye molecules will spread into the gaps of the water molecules, as water molecules will move into the gaps left from the dye molecules.	C4D		
		False	In this instance, the water molecules will be staying mostly still as dye molecules move to fill in the gaps surrounding water molecules.	C4D		

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Text	50-100 words x 29	One short text description for correct answer and incorrect answer.	MS word		
Sound Effects	Molecule binding to receptor	“Pop” sound	Audition		
	Molecule bouncing off from receptor	Blunt hitting sound	Audition		
	Pinging/radar sound		Audition		
	Molecular environment background sound x 2	“Deep ocean” muffled sound, one with more noise, one with less noise	Audition		
	Molecule being propelled sound	Pulsating shuffling sound	Audition		
	Molecule activated sound	Short “hum” sound	Audition		
Others	Dissemination webpage	To host animations for preview and presentation. 1 page parallax. Infographic style?	Adobe Edge?		