Project Notes:

<u>Project Title: Maximizing the effectiveness of mosquito chemical attractants using</u> <u>Drosophila as a model.</u> <u>Name: Justin Che</u>

Note Well: There are NO SHORT-cuts to reading journal articles and taking notes from them. Comprehension is paramount. You will most likely need to read it several times so set aside enough time in your schedule.

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Knowledge Gaps:

This list provides a brief overview of the major knowledge gaps for this project, how they were resolved and where to find the information.

Knowledge Gap	Resolved By	Information is located	Date resolved
8/26/21- biology of a mosquito (abilities)	Research	8/26/21 - What Bugs Mosquitoes? (2011, Spring). Retrieved August 19, 2021, from https://magazine.colu mbia.edu/article/what -bugs-mosquitoes	
8/26/21- what impacts a good night's sleep?	Research	8/26/21 - Nicol, F. (2019). Temperature and sleep. Energy and Buildings, 204, 109516. doi:10.1016/j.enbuild. 2019.109516	
8/31/21 - what causes tennis injuries and how to prevent/treat them	Research	8/31/21 - Dines, J. S., Bedi, A., Williams, P. N., Dodson, C. C., Ellenbecker, T. S., Altchek, D. W., Dines, D. M. (2015). Tennis Injuries. Journal of the American Academy of Orthopaedic Surgeons, 23(3), 181-189. doi:10.5435/jaaos-d-1 3-00148	
9/14/21- what chemicals attract mosquitoes the most	Research	9/14/21 - Mathew, N., Ayyanar, E., Shanmugavelu, S., & Muthuswamy, K.	

		(2013). Mosquito attractant blends to trap host seeking Aedes aegypti. <i>Parasitology</i> <i>Research, 112(3)</i> , 1305-1312. doi:10.1007/s00436-0 12-3266-2	
9/18/21- what voltage is needed to kill a mosquito?	Research	9/18/21 - Ortega-López, L. D., Pondeville, E., Kohl, A., León, R., Betancourth, M. P., Almire, F., Ferguson, H. M. (2020). The mosquito electrocuting trap as an exposure-free method for measuring human-biting rates by Aedes mosquito vectors. <i>Parasites & Vectors, 13(1).</i> doi:10.1186/s13071-0 20-3887-8	
9/21/21- clean, renewable energy sources?	Research	9/21/21 - Dincer, I., & Acar, C. (2015). A review on clean energy solutions for better sustainability. <i>International Journal</i> of Energy Research, 39(5), 585-606. doi:10.1002/er.3329	
9/29/21 - Are drosophila and mosquitoes similar enough in regards to sensory systems so that drosophila can be used as a replacement for	Research	9/29/21 - Raji, J. I., & Degennaro, M. (2017). Genetic analysis of mosquito detection of humans. <i>Current Opinion in</i> <i>Insect Science, 20</i> , 34-38.	

mosquitoes when conducting an experiment.		doi:10.1016/j.cois.20 17.03.003	
Is there correlation between mosquito population density and habitat/temp/humidity /climate and anything else that could affect density?	Research	10/3/21 - Barrera, R., Amador, M., Acevedo, V., Beltran, M., & Muñoz, J. L. (2018). A comparison of mosquito densities, weather and infection rates of Aedes aegypti during the first epidemics of Chikungunya (2014) and Zika (2016) in areas with and without vector control in Puerto Rico. <i>Medical and Veterinary</i> <i>Entomology, 33(1)</i> , 68-77. doi:10.1111/mve.1233 8	
How does noise relate to sleep?	Research	10/4/21 - Hume, K., Brink, M., & Basner, M. (2012). Effects of environmental noise on sleep. <i>Noise and Health, 14(61)</i> , 297. doi:10.4103/1463-17 41.104897	
Is DEET harmful to the environment?	Research	Aronson, D., Weeks, J., Meylan, B., Guiney, P. D., & Howard, P. H. (2011). Environmental release, environmental concentrations, and ecological risk of N,N-Diethyl-m-toluam ide (DEET). Integrated	

		Environmental Assessment and Management, 8(1), 135-166. doi:10.1002/ieam.271	
Sleep Cycle	Research	Luik, A. I., Zuurbier, L. A., Hofman, A., Someren, E. J., & Tiemeier, H. (2013). Stability and Fragmentation of the Activity Rhythm Across the Sleep-Wake Cycle: The Importance of Age, Lifestyle, and Mental Health. <i>Chronobiology</i> <i>International, 30(10)</i> , 1223-1230. doi:10.3109/0742052 8.2013.813528	
11/3/21	Research	Pogson, M., Hastings, A., & Smith, P. (2012). How does bioenergy compare with other land-based renewable energy sources globally? <i>GCB Bioenergy</i> , <i>5</i> (<i>5</i>), 513-524. doi:10.1111/gcbb.120 13	

Literature Search Parameters:

These searches were performed between (Start Date of reading) and XX/XX/2019. List of keywords and databases used during this project.

Database/search engine	Keywords	Summary of search
8/20/2021 Microsoft Bing	Mosquito	Article about What bugs mosquitoes
8/20/2021 Microsoft Bing	Pillow, sleep	Article about the benefits and negatives of pillows
8/28/2021 ScienceAdvances	Sleep, Smartphone, sleep schedules	Article about the differences of countries in terms of sleep duration and the factors that play into "normal" sleep, such as age or sex.
8/31/2021 PubMed	Tennis Injuries	Article about medicine behind types of injuries and what causes them in tennis
9/2/2021 George C. Gordon Library	Temperature, sleep	Temperature of the room depends on several factors in order to achieve a "comfortable" sleep. Things to take into account include: clothing, sheets, mattress, and blanket.
9/14/2021 George C. Gordon Library	Mosquito Attractant	An experiment was designed to test the attractiveness of 24 different compounds that potentially could attract mosquitoes. 1-octene-3-ol was found to be the most attractive.
9/18/2021 George C. Gordon Library	Electrocuting Mosquitoes	Two capture devices were compared to see which device, MET or BGS, could more effectively catch mosquitoes. The MET killed mosquitoes after luring them in with an electricity net and

		had a plastic net for safety.
9/21/21 George C. Gordon Library	Comparison of Clean and Renewable Energy	A review of current clean energy sources was compared: solar, wind, biomass, geothermal, ocean, and hydro energy. Each energy source was compared with each other and an "ideal" source, which was rated 10/10 on all areas, such as efficiency or cost.
9/29/21 George C. Gordon Library	Drosophila mosquito	In summary, <i>drosophila</i> is used as a model insect for researchers and scientists. The biology of <i>drosophila</i> is expected to be similar to that of mosquitoes, so similar experiments can be performed. However, it is not known if <i>drosophila</i> and mosquitoes will react to the same stimuli. Examining how tests performed on <i>drosophila</i> can help to conduct experiments on mosquitoes.
10/3/21 George C. Gordon Library	Mosquito density factors	Using data from four different areas, two tests and two control, there was correlation found between temp, humidity, weather, and amount of mosquitoes documented on the traps.
10/4/21 George C. Gordon Library	Noise and sleep	There is a certain level of noise that can affect sleep. Noise, if recurrent, will have negative short and long term impacts on health.
10/9/21 George C. Gordon Library	Mosquito population	The experiment released tagged mosquitoes from a certain point, and combining capture numbers of tagged and untagged mosquitoes, an

Article #1 Notes: Title

Article notes should be on separate sheets

KEEP THIS BLANK AND USE AS A TEMPLATE

Source Title	
Source citation (APA Format)	
Original URL	
Source type	
Keywords	
Summary of key points (include methodology)	
Research Question/Problem/ Need	
Important Figures	
Notes	
Cited references to follow up on	
Follow up Questions	

Article #1 Notes: What Bugs Mosquitoes?

Article notes should be on separate sheets

8/21/21

Source Title	What Bugs Mosquitoes?
Source citation (APA Format)	What Bugs Mosquitoes? (2011, Spring). Retrieved August 19, 2021, from https://magazine.columbia.edu/article/what-bugs-mosquitoes
Original URL	https://magazine.columbia.edu/article/what-bugs-mosquitoes
Source type	Website
Keywords	Mosquito, infrared light, energy
Summary of key points (include methodology)	Mosquitoes are very sensitive to heat and infrared light, helping them locate their prey. However, infrared light can be used to confuse mosquitoes. A barrier of infrared lasers has a possibility of preventing mosquitoes from biting, which would help save many lives.
Research Question/Problem/ Need	Mosquitoes are the cause of a lot of deaths each year.
Important Figures	None in the article
Notes	 Mosquitoes are deadly and evolve quickly Mosquitoes are very sensitive to heat and light and can be confused if they receive too much Infrared barrier has a possibility of deterring mosquitoes from certain areas Infrared barrier needs source of energy
Cited references to follow up on	None in the article. These are some references that I may use I found later Martin EnserinkJul. 17, 2., Gretchen VogelAug. 20, 2., Richard StoneAug. 20, 2., Anil OzaAug. 17, 2., Meredith WadmanAug. 16, 2., Alex ViverosAug. 13, 2., Rachel FrittsAug. 3, 2. (2017, December 10). The Mosquito Paradox. Retrieved from <u>https://www.sciencemag.org/news/2008/07/mosquito-paradox</u>
	Ginsburg, J. M. (1935). Protection From Mosquito Bites In Outdoor Gatherings. <i>Science</i> , 82(2134), 490-491. doi:10.1126/science.82.2134.490Ginsburg, J. M. (1935). Protection From Mosquito Bites In Outdoor Gatherings. <i>Science</i> , 82(2134), 490-491. doi:10.1126/science.82.2134.490
	Kupferschmidt, K. (2016). This scientist is the ultimate mosquito killer. <i>Science</i> . doi:10.1126/science.aal0255
Follow up Questions	What wavelengths of infrared affect mosquitoes the greatest/most effectively? What amount of infrared is needed to confuse mosquitoes? Will it be harmful to the environment or the user? How effective is using infrared to prevent mosquito bites than compared to other methods of repelling mosquitoes?

Article #2 Notes: Is your pillow hurting your health?

Article notes should be on separate sheets 8/21/21

Source Title	Is your pillow hurting your health?	
Source citation (APA Format)	Is your pillow hurting your health? (2021, February 15). Retrieved from https://www.health.harvard.edu/pain/is-your-pillow-hurting-your-health	
Original URL	https://www.health.harvard.edu/pain/is-your-pillow-hurting-your-health	
Source type	Website	
Keywords	Comfortable, pillow, health, sleep, neck,	
Summary of key points (include methodology)	Pillows help people have a better sleep, which is really important for their health. The pillow helps most with the neck of the human body, since the position of the human body is very important when sleeping. Every human may have different preferences with their pillow and the incline of their pillow.	
Research Question/Problem/ Need	Many people struggle to get a good sleep during the night.	
Important Figures	None in the article	
Notes	 Being comfortable is correlated to having a good sleep Being in an unhealthy position when sleeping can lead to neck pain Pillows can negatively affect patients with sleep apnea Sleep is important because that is when the body "rebuilds/repairs" itself and grows. It also affects mood, appetite, and the brain, which can lead to diseases and conditions Special pillows have been engineered for different purposes, such as be friendly to people who have sleep apnea Pillow preference is personal, but the firmness of the pillow is important. 	
Cited references to follow up on	None in the article. These are some references I may use Casiraghi, L., Spiousas, I., Dunster, G. P., Mcglothlen, K., Fernández-Duque, E., Valeggia, C., & Iglesia, H. O. (2021). Moonstruck sleep: Synchronization of human sleep with the moon cycle under field conditions. <i>Science Advances</i> , 7(5). doi:10.1126/sciadv.abe0465 Obradovich, N., Migliorini, R., Mednick, S. C., & Fowler, J. H. (2017). Nighttime	

	temperature and human sleep loss in a changing climate. <i>Science Advances</i> , <i>3</i> (5). doi:10.1126/sciadv.1601555
	Walch, O. J., Cochran, A., & Forger, D. B. (2016). A global quantification of "normal" sleep schedules using smartphone data. <i>Science Advances</i> , <i>2</i> (5). doi:10.1126/sciadv.1501705
Follow up Questions	Do different inclines affect the human body differently? Is there a correlation between the incline of the pillow and similar groups of humans (age, m/f, etc.)? How common are symptoms and conditions that may result from a poor sleep or bad sleeping posture?

Article #3 Notes: A global quantification of "normal" sleep schedules using smartphone data.

Article notes should be on separate sheets 8/28/21

Source Title	A global quantification of "normal" sleep schedules using smartphone data.
Source citation (APA Format)	Walch, O. J., Cochran, A., & Forger, D. B. (2016). A global quantification of "normal" sleep schedules using smartphone data. <i>Science Advances, 2(5).</i> doi:10.1126/sciadv.1501705
Original URL	A global quantification of "normal" sleep schedules using smartphone data (nih.gov)
Source type	Scholarly Journal Article
Keywords	Sleep, sleep schedules, smart phones
Summary of key points (include methodology)	 An app was used for anonymous people to submit data about their "normal" sleep times, home time zone, and average lighting. The data was looked at and analyzed with existing resources. The scientists' goal was to show mobile technology is a viable methodology and to "quantify 'real-world' social pressures on global sleep trends" (sleep schedules). Methodology was reliable, according to article. The scientists used mobile devices to generate data to test their hypothesis
Research Question/Problem/ Need	What is a "normal" sleep schedule?
Important Figures	Sunset/sunrise and sleep duration



	 Mean sleep predicted by bedtime Vocab: circadian- 24 hr cycle Demographics- stats relating to population Midsleep- halfway point of bedtime and wake time Bootstrapping- get into or out of situation with existing resources
Cited references to follow up on	1. Roenneberg T., Allebrandt K. V., Merrow M., Vetter C., Social jetlag and obesity. Curr. Biol. 22, 939–943 (2012). [PubMed] [Google Scholar]
	 Wittmann M., Dinich J., Merrow M., Roenneberg T., Social jetlag: Misalignment of biological and social time. Chronobiol. Int. 23, 497–509 (2006). [PubMed] [Google Scholar]
	3. Roenneberg T., Chronobiology: The human sleep project. Nature 498, 427–428 (2013). [PubMed] [Google Scholar]
	And 12 more
Follow up Questions	What is "indoor" vs "outdoor" light? Why does sex influence sleep (sensitivity to light, bedtime, etc.)? What are the differences between different countries, and how does it correlate with sleep? Why does bedtime and not wake time influence sleep duration?

Article #4 Notes: Tennis Injuries

Article notes should be on separate sheets

Source Title	Tennis Injuries	
Source citation (APA Format)	Dines, J. S., Bedi, A., Williams, P. N., Dodson, C. C., Ellenbecker, T. S., Altchek, D. W., Dines, D. M. (2015). Tennis Injuries. <i>Journal of the American Academy of Orthopaedic Surgeons, 23(3),</i> 181-189. doi:10.5435/jaaos-d-13-00148	
Original URL	Tennis Injuries: Epidemiology, Pathophysiology, and Treatmen: JAAOS - Journal of the American Academy of Orthopaedic Surgeons (lww.com)	
Source type	Scholarly Journal Article	
Keywords	Tennis Injury	
Summary of key points (include methodology)	Tennis is a very popular sport, but because of the constant stress placed on almost all areas of the body, many injuries occur. Different areas of the body are injured by different strokes or movements in tennis, as observed by a multitude of studies conducted to see which are the most common injuries for each tennis related movement.	
Research Question/Problem/ Need	What are the injuries caused by tennis	

8/31/21-9/2/21

Important Figures	Table 1		
iniportant rigaroo	Injuries by Anatomic Region		
	Anatomic Region and Injury	Mechanism	
	Shoulder		
	Internal impingement	Repetitive overhead motions	
	Elbow	Repetitive overhead motions	
	Lateral elbow tendinopathy	Backhand strokes with wrists flexed	
	Medial elbow tendinopathy	Excessive wrist snap on serves and forehand strokes, open-stance hitting, short-arming strokes	
	Wrist Extensor carpi ulnaris tendinitis	Ulnar deviation in nondominant wrist	
	Extensor carni ulnaris subluvation	during two-handed backhand	
		stress from hitting low forehand	
	Abdomen	Lincolling and flowing of trunk during	
	Abdominai muscle strain	overhead serve	
	Low Back		
	Lumbar strain	Change in intensity or duration of play, or change in stroke technique	
	Lumbar disk degeneration and herniation	Rotational forces and hyperextension during serve	
	SLAP = superior labrum anterior-to-posterio	r	
Notes	 Playing tenni 	is stresses joints (sup	raphysiologic forces?)
	 Acute injurie 	s usually cause lower	injuries and chronic usually
	upper	-	
		most strenuous	
		ps	
	■	Wind-up	
	-	Early cocking	
	_	Late cocking	
	-		ntornal impingoment in
		shoulder = p	oain. Labral pathology?
	-	Acceleration	
		Follow through	
		nt during these steps	can cause injury to
	Any wrong moveme	in during these steps	can cause injury to
	particular body part		
	T		
	 Iennis requii 	res aerobic and anaer	obic movements
	 Special cond 	litioning exercises for	tennis: squats, trunk
	rotations, sh	oulder/wrist contractio	ns
	 Studies have 	found:	
		670/ lower body offer	ted (ankle and thigh most
	0 31%-	or% lower body allec	led (ankle and thigh most
	comn	non)	
	○ 20%-	49% upper body affect	ted (shoulder and elbow
	most	common)	
	0 3%-2	1% trunk affected (low	ver back)
			an tune of injury then
			non type of injury, then
	inflan	nmation then sprains	
	What	causes the wide rand	e of percentages?
	Racquet tech	nology has changed	a lot
		int bood size - mars r	ower but more leading on
	• Larger lacqu	iet nead size – more p	lower but more loading on
	i torearm mus	cles	

 Increased stiffness = increased stiffness = increased	eased vibration (that's why there are
 racquet dampeners, which "Sweet spot" on tennis rac 	n neip a little)
and also good shot	
Tennis elbow is a common	n condition
 Different grips tend to cau 	se different conditions
 Balls and injury have not 	yet been correlated
Little evidence to support	different court surfaces (clay, grass,
hard) cause injuries, altho	ough playing consistently on different
surfaces may cause injuri	es (Nigg and Yeardon)
Many tests to test for labr	al pathology
Normal treatment of interr	nal impingement does not require
surgery. Only gets back o	riginal Range of Motion
Iennis injuries: Jeteral opioondulit	io
	IS ndinitin
	linonathy
Tennis elbow is prevalent	in less experienced played because
they tend to hit backhand	s with flexed wrists while pros
increase wrist extension	
 Pros have iniuries in elbor 	ws caused by wrist snap for speed
 Diagnosed by physical ex 	amination and/or MRI
Treated by resting and/or	physical therapy and/or
corticosteroids and/or sur	gery
Wrist can be injured due t	o overuse
ECU common	
Treatment includes: splint	s, resting, NSAIDs?,
corticosteroids, technique	modification, and reconstruction
Ab muscle strain is very c	ommon. Abs important in serving
• Groin can also be strained	
Ireated with rest and ther	n stretching renab
Low back injury because	of axial rotation
Lumbar Strain most comm	and hornistion are other common
 Lumbar disk degeneration lower back injuries becau 	se of rotation
Treatment mostly non-sur	
Avoid lower back injury by	/ doing rotational exercises
 Hip injuries caused by rot 	ations
 Most cases treated with id 	ce. rest and PT
Ankle sprain most commo	on injury
The different playing surface	aces have not yet been found to
cause more frequent ankl	e sprains
Three grades of ankle spr	ains
First two grades treated w	vith rest, ice, and if needed crutches
Grade three may need su	rgery
Supportive braces are help	pful to avoid ankle sprains

• In order to avoid injuries, know how tennis equipment and

	 form affects your ability to play and be safe. Also do workouts and stretches specifically related to the muscles/other body parts that undergo more stress than usual. Vocab- Supraphysiologic- Indicating a dose that is larger or more potent than would occur naturally, as of a chemical agent that mimics a hormone. Epicondylitis- irritation or inflammation of the epicondyle or surrounding tissue, especially at the elbow. Epidemiology- the study, assessment, and analysis of public health concerns in a given population Glenohumeral- A joint Delineated- precisely traced or outlined Impingement- the act or fact of interfering with something, especially a nerve, through contact or pressure Abutment- junction
Cited references to follow up on	 Kovacs MS: Applied physiology of tennis performance. Br J Sports Med 2006;40(5):381–385, discussion 386. Pluim BM, Staal JB, Windler GE, Jayanthi N: Tennis injuries: Occurrence, aetiology, and prevention. Br J Sports Med 2006;40(5):415–423. Eygendaal D, Rahussen FT, Diercks RL: Biomechanics of the elbow joint in tennis players and relation to pathology. Br J Sports Med 2007;41(11):820–823. (and 48 more)
Follow up Questions	 What are supraphysiologic forces? What are acute and chronic injuries? What are all the conditioning exercises for tennis to minimize injury? What is tennis elbow? What is labral pathology? What are corticosteroids? What is ECU? What are beneficial rotational exercises? (pretty much do research on the different names for the injuries)

Article #5 Notes: Temperature and sleep

Article notes should be on separate sheets

Source Title	Temperature and sleep
Source citation (APA Format)	Nicol, F. (2019). Temperature and sleep. <i>Energy and Buildings, 204</i> , 109516. doi:10.1016/j.enbuild.2019.109516
Original URL	https://www-sciencedirect-com.ezpv7-web-p-u01.wpi.edu/science/article/pii/S0378778819314100
Source type	Scholarly Journal Article
Keywords	"Temperature, Sleep quality, Comfort, Bedclothes, and sleepwearEnergy" (Nicol 9/2/2021 1)
Summary of key points (include methodology)	The room temperature affects the quality of sleep. The article restates observations and data points determined in previous studies and analyzes how temperature affects the quality of sleep.
Research Question/Problem/ Need	How does the temperature of the room correlate with comfortness when sleeping?

9/4/2021-9/6/2021



	CIBSE CIBSE Guide A, Environmental Design Chapter 1: Environmental Criteria for Design Chartered Institution of Building Services Engineers, London (2015) Google Scholar
	CIBSE TM59 Design methodology for the Assessment of Overheating Risk in Homes Chartered Institution of Building Services Engineers, London (2017) Google Scholar And 23 more
Follow up Questions	Is sleep with clothes or no clothes better in order to achieve a better quality of sleep? What are togs and clo units? How much heat is lost when sleeping through human body? What are the most efficient ways to lower room temperature?

Article #6 Notes: Mosquito attractant blends to trap host seeking Aedes aegypti

Article notes should be on separate sheets

9/14/21-9/18/21

Source Title	Mosquito attractant blends to trap host seeking Aedes aegypti
Source citation (APA Format)	Mathew, N., Ayyanar, E., Shanmugavelu, S., & Muthuswamy, K. (2013). Mosquito attractant blends to trap host seeking Aedes aegypti. <i>Parasitology Research, 112(3)</i> , 1305-1312. doi:10.1007/s00436-012-3266-2
Original URL	https://link-springer-com.ezpv7-web-p-u01.wpi.edu/article/10.1007/s0 0436-012-3266-2
Source type	Journal Article
Keywords	Mosquito Attractant
Summary of key points (include methodology)	The chemical 1-octene-3-ol attracts mosquitoes the best. The experiment included 24 different compounds and 7 different compound blends that were tested on unfed <i>Ae. aegypti</i> female mosquitoes in an olfactometer to see what the compound did to the mosquito
Research Question/Problem/ Need	What chemicals/odors attract mosquitoes most effectively?
Important Figures	A



Cited references to follow up on	Acree F Jr, Turner RB, Gouck HK, Beroza M, Smith N (1968) I-Lactic acid: amosquito attractant isolated from humans. Science 161:1346-1347
	Allan SA, Bernier UR, Kline DL (2006) Attraction of mosquitoes to volatiles associated with blood. J Vect Ecol 31(1):71-78
	Ansari MA, Padma V, Mamta T, Razdana RK (2000) Larvicidal and mosquito repellent action of peppermint (Mentha piperita) oil. Biores Technol 71:267-271
Follow up Questions	Which types of people are more prone to mosquito bites? Is there correlation between race or blood type or sex and frequency of mosquito bites? Which chemicals are safe to people and the environment? What causes a chemical to attract mosquitoes more effectively than other chemicals?

Article #7 Notes: The mosquito electrocuting trap as an exposure-free method for measuring human-biting rates by Aedes mosquito vectors

Article notes should be on separate sheets

Source Title	The mosquito electrocuting trap as an exposure-free method for measuring human-biting rates by Aedes mosquito vectors
Source citation (APA Format)	Ortega-López, L. D., Pondeville, E., Kohl, A., León, R., Betancourth, M. P., Almire, F., Ferguson, H. M. (2020). The mosquito electrocuting trap as an exposure-free method for measuring human-biting rates by Aedes mosquito vectors. <i>Parasites & Vectors, 13(1)</i> . doi:10.1186/s13071-020-3887-8

Original URL	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6961254/
Source type	Journal Article
Keywords	Electrocuting Mosquitoes
Summary of key points (include methodology)	Two methods of trapping mosquitoes, the MET, and BGS, were compared and the female <i>aedes aegypti</i> mosquitoes were tested for disease. The <i>Aedes</i> mosquito species' activity was also observed based on the time of day. The MET and BGS trapping effectivity are about the same. Test- 4 houses ~90m apart, 7:00-19:00
Research Question/Problem/ Need	What voltage is needed to kill a mosquito?
Important Figures	Aedes aegypti
	BGS MET BGS MET Trap Type
	Culex quinquefasciatus
	5 - 50 - 50 - 50 - 50 - 50 - 50 - 50 -
	BGS MET BGS MET
	тгар туре
Notes	 Human landing catch (HLC) Mosquito electrocuting net (MET) BG-sentinel (BGS) Both trapping methods do not have significant difference in the amount of mosquitoes found in the trap, but MET did have more female mosquitoes Aedes host-seeking early morning and late afternoon

	 Host-seeking negatively associated with temp and humidity Mosquito control primary strategy for preventing disease transmission HLC is potentially dangerous, because data comes from human MET and BGS are "exposure free" MET is a net that can have humans inside so mosquitoes are attracted to them but killed when they make contact with MET BGS- 12V battery to mimic air current CO2 increases trap effectiveness (but possible repercussions on climate?) 5mm distance mosquito cannot pass through MET- 2 12V batteries. Give power source ~6W or 600V. Non-conductive plastic wire for safety Vocab- Entomological- study of insects Arbovirus- any of a group of viruses that are transmitted by mosquitoes, ticks, or other arthropods. They include encephalitis, dengue, and yellow fever Diel- 24 hour period Prophylaxis- action taken to prevent disease, especially by specified means or against a specified disease Peridomestic- located around human habitation
Cited references to follow up on	 WHO. Global burden of major vector-borne diseases. Global vector control response 2017–2030 Geneva: World Health Organization; 2017. p. 2. https://www.who.int/vector-control/publications/global-control-respons e/en/. Accessed 4 Aug 2019. And 95 more
Follow up Questions	 What is the average size of "common" mosquitoes? Does 5mm gaps work for all? What are the differences between mosquito species? What are the characteristics that difference mosquitoes possess? (what diseases they carry, size, activity, etc.) What do temp and humidity have to do with host-seeking frequency? I need to start thinking of materials (3d printing?, e-conductors that are also cheap and durable, battery, solar panel)

Article #8 Notes: A review on clean energy solutions for better sustainability

Article notes should be on separate sheets

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Source Title	A review on clean energy solutions for better sustainability
Source citation (APA Format)	Dincer, I., & Acar, C. (2015). A review on clean energy solutions for better sustainability. <i>International Journal of Energy Research, 39(5),</i> 585-606. doi:10.1002/er.3329
Original URL	https://onlinelibrary-wiley-com.ezpv7-web-p-u01.wpi.edu/doi/full/10.1 002/er.3329
Source type	Journal article
Keywords	Clean, renewable, energy, comparison
Summary of key points (include methodology)	A study that reviewed current methods of energy production. The study looked at several criteria to compare nuclear, solar, wind, ocean, hydro, geothermal, and biomass energy generation methods. Each energy generation method has its strengths and weaknesses. I am leaning towards solar, wind, biomass, and maybe hydro because of feasibility.
Research Question/Problem/ Need	What is the most efficient but also clean and renewable energy source?







	 Maybe negatively impacts ocean life Not for my project? Wind Simple tech Accessible in developing countries Not constant (not always windy) Negative impact on the ecosystem? Hydro Safe Inexpensive Accessible in developing countries Causes change in landscape Part of electricity lost when transmitting from one place to another Hydrogen used as energy carrier Applicable to my project? Multigeneration system Combination of energy systems cogeneration: heat and power. CCHP- combined cooling, heat, power Applicable to my project? Vocab- Detriment- the state of being harmed or damaged Equitable- fair and impartial Intermittent- occurring at irregular intervals; not continuous or steady Anthropogenic- (chiefly of pollution or environmental change) originating in human activity
Cited references to follow up on	1 International Energy Agency Technical Report. Key World Energy Statistics, 2014. Website: http://www.iea.org/publications/freepublications/publication/KeyWorld 2014.pdf; 2014 [accessed 01.11.2014]. And 81 more
Follow up Questions	How does solar energy generation have a negative impact on the ecosystem? How will the material of the energy generator impact the environment? What waste can be generated? How is the energy generated from these methods stored? How does a battery work and how is energy transferred from one source to another? What is needed to transfer energy? Wires? Can multigeneration systems be simply broken down?

Article #9 Notes: Genetic analysis of mosquito detection of humans

Article notes should be on separate sheets

Source Title	Genetic analysis of mosquito detection of humans
Source citation (APA Format)	Raji, J. I., & Degennaro, M. (2017). Genetic analysis of mosquito detection of humans. <i>Current Opinion in Insect Science, 20,</i> 34-38. doi:10.1016/j.cois.2017.03.003
Original URL	https://www-sciencedirect-com.ezpv7-web-p-u01.wpi.edu/science/article/pii/S2214574517300342
Source type	Journal Article
Keywords	Drosophila, Mosquito
Summary of key points (include methodology)	A journal article which reviewed the current and knowledge gaps of human biology, mainly host-seeking processes and what affects each process. There are three main receptors on a mosquito that impacts host-seeking, GRs, IRs, and ORs, which sense heat, CO2, odors, temp, and taste. Multiple cues need to be implemented in order to have a greater repel/attract rate.
Research Question/Problem/ Need	What cues attract mosquitoes, how is this similar to the genetic analysis of <i>drosophila</i> , and how can the olfactory-based cues be used as a repellent?
Important Figures	(A) Novel odor ligands Activators Inhibitors (B) Pull Pull Mask or Push

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	(Antenna Maxilary Palp Proboscia Eye
Notes	 Host-seeking- Chemosensory, thermal, visual cues Gene editing is being used to change <i>Aedes</i> mosquitoes. Olfactory receptors in <i>Aedes</i> already successful Skin microbiota one of the roles that attracts mosquitoes Odors that affect a mosquito's electrophysiological and behavior cause mosquitoes to be repelled or attracted (including 1-octene-3-ol) Olfactory sensors at antennae, legs (maxillary palps), and proboscis. CO2 induces mosquito flight takeoff Mosquitoes land on human body temps in the presence of CO2 SEZ of brain may integrate odor and taste cues during feeding, like <i>drosophila</i> Ionotropic Receptors (IR)? Of mosquito sense temp in hosts. IRs found in <i>drosophila</i> Gustatory receptors found, GRs detect heat Odorant receptors (OR)- odor <i>Drosophila</i> IR- amines and acids, taste, moisture, temp. OR- esters and alcohols. GR- light, warmth, CO2 Effective trap needs to incorporate multiple cues Vocab: Chemosensory: chemical stimuli Salient: most noticeable or important Mutagenesis: production of genetic mutations Elicit: evoke or draw out (a response, answer, or fact) from someone in reaction to one's own actions or questions Innervating: supply with nerves
Cited references to follow up on	D.W. Severson, S.K. Behura Genome investigations of vector competence in Aedes aegypti to inform novel arbovirus disease control approaches Insects, 7 (2016), p. 58

	And 56 more
Follow up Questions	Is CO2 the most effective (or only "inducer") that works effectively? Does CO2 have to be present for a mosquito to begin host-seeking? Does the "host" need to have a warm body temperature? How much repellent is needed to mask the attractant?

Article #10 Notes: A comparison of mosquito densities, weather and infection rates of Aedes aegypti during the first epidemics of Chikungunya (2014) and Zika (2016) in areas with and without vector control in Puerto Rico

Source Title	A comparison of mosquito densities, weather and infection rates of <i>Aedes aegypti</i> during the first epidemics of Chikungunya (2014) and Zika (2016) in areas with and without vector control in Puerto Rico
Source citation (APA Format)	Barrera, R., Amador, M., Acevedo, V., Beltran, M., & Muñoz, J. L. (2018). A comparison of mosquito densities, weather and infection rates of Aedes aegypti during the first epidemics of Chikungunya (2014) and Zika (2016) in areas with and without vector control in Puerto Rico. <i>Medical and Veterinary Entomology, 33(1),</i> 68-77. doi:10.1111/mve.12338
Original URL	https://onlinelibrary.wiley.com/doi/full/10.1111/mve.12338
Source type	Journal Article
Keywords	Mosquito densities
Summary of key points (include methodology)	AGO mosquito traps were placed in two of four observed different communities. Female <i>A. aegypti</i> mosquitoes were sampled every week from Jan - Dec in 2014 and 2016 (CHIKV and DENV outbreaks). Weather data was also observed and recorded to see how it would change the density of mosquitoes at the different locations.
Research Question/Problem/ Need	Comparison of mosquito densities and weather of the <i>Aedes aegypti</i> species

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	 Weather variables- Accumulated rainfall 2 and 3 weeks before Avg daily temp Rainfall within 7 days doesn't impact number of mosquitoes captured Changes in weather variables between the years and communities used GLM and normal distribution Found location, temp, and rainfall affected density Mosquito density found to be higher after rainfall Weather in 2016 seemed more favorable- more rainfall and humid However, densities were lower Vector controlled areas had far less mosquitoes Vocab: Enzootic- relating to or denoting a disease that regularly affects animals in a particular district or at a particular season Ambient- relating to the immediate surroundings of something Anthropophilic- attracted to humans Boreal- of the northern regions
Cited references to follow up on	Acevedo, V., Amador, M., Felix, G. & Barrera, R. (2016) Operational aspects of the Centers for Disease Control and Prevention autocidal gravid ovitrap. Journal of the American Mosquito Control Association, 32, 254–257. And 59 more
Follow up Questions	What is a hay packet, is it effective and common and eco-friendly? Why doesn't recent rain affect the number of captured mosquitoes? What made 2016 weather more favorable for mosquitoes? What are effective large-scale vector control methods?

Article #11 Notes: Effects of environmental noise on sleep

Source Title	Effects of environmental noise on sleep
Source citation (APA Format)	Hume, K., Brink, M., & Basner, M. (2012). Effects of environmental noise on sleep. <i>Noise and Health, 14(61),</i> 297. doi:10.4103/1463-1741.104897
Original URL	https://go.gale.com/ps/i.do?p=AONE&u=mlin_c_worpoly&id=GALE% 7CA314191889&v=2.1⁢=r&ugroup=outside
Source type	Journal Article
Keywords	Effect of noise on sleep
Summary of key points (include methodology)	The journal article reviewed several studies previously conducted on how noise may or may not adversely affect sleep quality. The evidence in the study all point to a certain amount of noise will cause one to wake up, and if the noise is recurrent, may cause sleep deprivation, which is very bad for one's health. There are many common sources of noise, most of which are easy to mitigate. However, certain things, such as transportation noise pollution is hard, and can negatively affect health if the noise is re-occurring at night over multiple days. Noise dampening technology should be developed as fast as transportation is being developed to minimize the effect noise can have on people sleeping.
Research Question/Problem/ Need	How does noise affect the quality of sleep?
Important Figures	None in the article
Notes	 Short and long term negative effects of noise on sleep have been found (since 2012) Sources of noise that disturb sleep can be found anywhere, such as in the home, vehicles, etc. Sleep deprivation can seriously affect health, both physical and mental

10/04/21

Article #12 Notes: Estimating Mosquito Population Size From Mark–Release–Recapture Data

Source Title	Estimating Mosquito Population Size From Mark–Release–Recapture Data
Source citation (APA Format)	Cianci, D., Broek, J. V., Caputo, B., Marini, F., Torre, A. D., Heesterbeek, H., & Hartemink, N. (2013). Estimating Mosquito Population Size From Mark–Release–Recapture Data. <i>Journal of</i> <i>Medical Entomology, 50(3),</i> 533-542. doi:10.1603/me12126
Original URL	https://academic-oup-com.ezpv7-web-p-u01.wpi.edu/jme/article/50/3/ 533/889983
Source type	Journal article
Keywords	Mosquito population
Summary of key points (include methodology)	Population size was found using MRR. The mosquito population size was estimated based on the marked and unmarked mosquito captures. The model mentioned in the article took into account the distance between traps and other variables when estimating population size.
Research Question/Problem/ Need	How is the mosquito population determined?

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	 Mosquitoes are expected to be found at more numbers at the traps near release point October largest number of mosquitoes in the traps Vocab: Hypergeometric- involving, related to, or analogous to operations or series that transcend ordinary geometrical operations or series Logistic model- binary regression Gauge- the thickness, size, or capacity of something, especially as a standard measure. Retention- the continued possession, use, or control of something.
Cited references to follow up on	Alto B. W. Juliano S. A 2001. Temperature effects on the dynamics of Aedes albopictus (Diptera: Culicidae) populations in the laboratory. J. Med. Entomol.38: 548–556. And 36 more
Follow up Questions	Is there significance that no released and marked mosquitoes were captured after 9 days or outside a 210 meter area? Is there an easier way to understand the Fisher-Ford method? How is population size and survival and dispersal factors similar? How did weather/temp affect the data?

Article #13 Notes: Environmental release, environmental concentrations, and ecological risk of N,N-Diethyl-m-toluamide (DEET)

10/17/21-10/21/21

Source Title	Environmental release, environmental concentrations, and ecological risk of N,N-Diethyl-m-toluamide (DEET)		
Source citation (APA Format)	Aronson, D., Weeks, J., Meylan, B., Guiney, P. D., & Howard, P. H. (2011). Environmental release, environmental concentrations, and ecological risk of N,N-Diethyl-m-toluamide (DEET). <i>Integrated Environmental Assessment and Management, 8(1),</i> 135-166. doi:10.1002/ieam.271		
Original URL	https://setac.onlinelibrary.wiley.com/doi/full/10.1002/ieam.271		
Source type	Journal article		
Keywords	DEET, environment		
Summary of key points (include methodology)			
Research Question/Problem/ Need	Is DEET harmful to the environment?		
Important Figures	100 75 100 75 50 100 25 100 100 0 25 100 -25 100 100		

Notes	 N,N-Diethyl-m-toluamide is DEET DEET mainly found in insect repellent, but there are other uses of DEET Estimated 5-7 million pounds of DEET used in US DEET considered not PB&T Greater concentrations of DEET are being found in surface water and wastewater WWTP- wastewater treatment plant DEET contamination believed to come from WWTP DEET possible can move through semiarid or arid soil WWTP not 100% effective at removing DEET Types of studies on DEET removal- Screening tests Pilot plant studies DEET may be harmful to microorganisms DEET works by evaporating from skin, but not all of it ~65% of DEET expected stay on skin, and later is washed off of skin and sent to WWTP Types of treatment and season also affects DEET removal efficiency Urban areas more affected by WWTP discharge Vocab: Antifeedant- a naturally occurring substance in certain plants which adversely affects insects or other animals which eat them. Leachate- water that has percolated through a solid and leached out some of the constituents. Effluent- liquid waste or sewage discharged into a river or the sea. Metabolite- a substance formed in or necessary for metabolism. Municipal- relating to a city or town or its governing body.		
Cited references to follow up on	[ACI] American Cleaning Institute. 2011. iSTREEM™. Washington (DC): American Cleaning Institute And 113 more		
Follow up Questions	What are pilot plant studies? What is the solid retention time? Why is one treatment method more effective than another? Why don't high concentrations of DEET in the environment not affect larger organisms or plants? Why didn't the study choose to conduct DEET on plants?		

Article #14 Notes: Stability and Fragmentation of the Activity Rhythm Across the Sleep-Wake Cycle: The Importance of Age, Lifestyle, and Mental Health

Source Title	Stability and Fragmentation of the Activity Rhythm Across the Sleep-Wake Cycle: The Importance of Age, Lifestyle, and Mental Health
Source citation (APA Format)	Luik, A. I., Zuurbier, L. A., Hofman, A., Someren, E. J., & Tiemeier, H. (2013). Stability and Fragmentation of the Activity Rhythm Across the Sleep-Wake Cycle: The Importance of Age, Lifestyle, and Mental Health. <i>Chronobiology International, 30(10),</i> 1223-1230. doi:10.3109/07420528.2013.813528
Original URL	https://www-tandfonline-com.ezpv7-web-p-u01.wpi.edu/doi/full/10.31 09/07420528.2013.813528
Source type	Journal article
Keywords	Sleep Cycle
Summary of key points (include methodology)	Activity rhythms were observed in middle-age and elderly persons and also documented how it affected sociodemographics, mental health, lifestyle, and sleep characteristics. 96+hrs, 1734 people.
Research Question/Problem/ Need	What is a sleep cycle?

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Important Figures	Haven		
important rigures	Demographics		
	Female, % 53.4		
	Age (years) 62.25 ± 77.3		
	Employment, %	33.1	
	Education, %	15.0	
	Intermediate	63.3	
	High	19.7	
	Health indicators	0.29 ± 0.42	
	Cognitive functioning (score)	27.98 ± 1.75	
	Depressive symptoms (score)	5.49 ± 7.13	
	Stroke, %	2.6	
	Cancer, %	11.8	
	Diabetes Mellitus, %	12.9	
	BMI (kg/m ²)	27.86±4.16	
	Coffee (days per week)	4.36 ± 2.91	
	Alcohol (units per week) Current smoking, %	9.47±9.34 20.6	
Notes			

Cited references to follow up on	Ancoli-Israel S, Alessi C. (2005). Sleep and aging. Am J Geriatr Psychiatry, 13, 341–3 And 33 more
Follow up Questions	Can a participant's response be trusted? How does employment status affect sleep? Which health risks do fragmentation of sleep most prominently happen? Are naps bad for your health?

Article #15 Notes: How does bioenergy compare with other land-based renewable energy sources globally?

Source Title	How does bioenergy compare with other land-based renewable energy sources globally?		
Source citation (APA Format)	Pogson, M., Hastings, A., & Smith, P. (2012). How does bioenergy compare with other land-based renewable energy sources globally? <i>GCB Bioenergy, 5(5)</i> , 513-524. doi:10.1111/gcbb.12013		
Original URL	https://onlinelibrary.wiley.com/doi/full/10.1111/gcbb.12013		
Source type	Journal article		
Keywords	Bioenergy, renewable energy		
Summary of key points (include methodology)	<i>Miscanthus</i> , bioenergy source, yield calculated from meteorological and soil data. Solar energy calculated with radiation, based on latitude, cloud cover, and time of year. Wind energy calculated with avg. wind speed data of the month. Cost calculated from life-cycle of energy source. Bioenergy better small scale. Wind energy costly but produces enough energy and little C emission. Solar panel most energy production but high cost/high emission.		
Research Question/Problem/ Need	Which energy source applies to my project the best		
Important Figures	(a) (a) (b) (b) (c) (c) (c) (c) (c) (c) (c) (c		
	 b) Highest energy output w/ restrictions (cost and CO2) 		

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	c) Lower costd) Lowest C emission		
Notes	 Renewable energy = one way to reduce carbon emissions, energy security, and reducing fossil fuels 2009- 16% global energy come from renewable Renewable need to account for cost, carbon emissions and land Bioenergy low cost and low carbon emission where it may be grown Grow areas limited Land needs to be arable <i>Miscanthus</i> More power generation than wind, but wind more power in specific areas (higher density of turbines) Wind high cost low carbon emission Utilized anywhere High power output Generate power almost anywhere Solar panel high cost high carbon emission High carbon bc carbon emitted during manufacture process Generate power almost anywhere Generate power almost anywhere		
	Miscanthus: type of plant Incident: (especially of light or other radiation) falling on or striking something. Agronomy- the science of soil management and crop production.		
Cited references to follow up on	Abramowitz M, Stegun IA (1964) <i>Handbook of Mathematical Functions</i> . pp. 297– 300. Dover Publications, New York. And 70 more		
Follow up Questions	Is there a difference between utilizing larger and smaller solar panels in terms of C emission? Is there a clean way to manufacture solar panels, without releasing C? How is bioenergy utilized? What is the comparison of power sources at a smaller scale/size?		

Article #16 Notes: Olfaction in Drosophila

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Source Title	Olfaction in Drosophila		
Source citation (APA Format)	Vosshall, L. B. (2000). Olfaction in Drosophila. <i>Current Opinion in Neurobiology, 10(4),</i> 498-503. doi:10.1016/s0959-4388(00)00111-2		
Original URL	https://www-sciencedirect-com.ezpv7-web-p-u01.wpi.edu/science/article/pii/S0959438800001112		
Source type	Journal Article		
Keywords	Drosophila, Odorant binding protein, Odorant receptor, Olfaction, Circadian rhythms, Single unit physiology, Antennal lobe, Glomeruli, Behavior, Genetics		
Summary of key points (include methodology)	Review of <i>Drosophila</i> odorant receptors and research/studies already done. Summary of a multitude of studies conducted on gene expression <i>Drosophila</i> , mainly olfactory receptor genes (DORs), and how they affect fruit flies and also how they develop.		
Research Question/Problem/ Need	Drosophila Olfaction (article written by a lab trying to get in)		
Important Figures	<complex-block><complex-block></complex-block></complex-block>		

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Notes	 Drosophila melanogaster complicated olfactory system For identifying important things such as food Fruit fly good organism to study olfaction Mate, food, navigation of all insects depend on smell Sensitive Olfactory sensory organ covered with sensilla Odorant binding proteins unknown function Differences between organ and sensilla Odorant can attract and repel different neurons Fruit flies easily mutated with gene-editing 3 types of sensilla Odor targets specific Olfactory sensory system- could end up editing system completely = editing genes so humans "smell and taste bad" to mosquitoes Vocab: Transduce: convert variations in (a physical quantity) into an electrical signal, or vice versa Modulation: the exertion of a modifying or controlling influence on something. Ligand- an ion or molecule attached to a metal atom by coordinate bonding. Glomeruli- a cluster of nerve endings, spores, or small blood vessels, in particular a cluster of capillaries around the end of a kidney tubule, where waste products are filtered from the blood. 		
Cited references to follow up on	J.G. Hildebrand Analysis of chemical signals by nervous systems Proc Natl Acad Sci USA, 92 (1995), pp. 67-74 And 64 more		
Follow up Questions	What are the similarities and differences between <i>Drosophila</i> and mosquito olfactory sensory systems? How do genes express what an organism is attracted/repelled by? Do all organisms have rest times in olfactory function? How does this affect behavior?		

Article #17 Notes: Mosquito-borne diseases in Europe: an emerging public health threat

Source Title	Mosquito-borne diseases in Europe: an emerging public health threat		
Source citation (APA Format)	Calzolari, M. (2016). Mosquito-borne diseases in Europe: An emerging public health threat. <i>Reports in Parasitology</i> , 1. doi:10.2147/rip.s56780		
Original URL	https://www.dovepress.com/mosquito-borne-diseases-in-europe-an-e merging-public-health-threat-peer-reviewed-fulltext-article-RIP		
Source type	Journal article		
Keywords	malaria, arbovirus, Tahyna virus, Sindbis virus, West Nile virus, Dengue virus, Chikungunya virus, Zika virus		
Summary of key points (include methodology)	Literature review on the biology and life process of a mosquito as well as listing statistics on different mosquito born viruses (MBDs) and their effects on humans.		
Research Question/Problem/ Need	Statistics of impact of mosquitoes on humans		
Important Figures			
		DALYs 2013	95% confidence interval
	Malaria	65493.1	53064.9-79960.7
	Lymphatic filariasis	2022.1	1096.3-3294.4
	Dengue	1142.7	727.6-1978.2
	Yellow fever	30.7	25.3-37.1
	Other neglected tropical diseases* (including other mosquito-borne viral fevers)	3132.7	2328.1-4208.7
	Encephalitis** (including mosquito- borne viral encephalitis)	4804.2	4022.4–5926.9
	Human vector-born disease 17% of all infectious disease globally		

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	DALYs = disability-adjusted life years. Figure in thousands
Notes	 Tropical, poor socioeconomic conditions more exposed to deadly diseases Europe increase number of human cases - imported and indigenous Humans can be reservoir hosts of diseases During blood meal, virus transmitted 90%+ cases in sub-Saharan Africa Hundreds of millions of cases of malaria every year. Accounts for over half a million deaths per year Surveillance of mosquito populations vital for health officials Vocab: Recrudescence- the recurrence of an undesirable condition. Concordant- in agreement; consistent. Autochthonous- (of an inhabitant of a place) indigenous rather than descended from migrants or colonists Viremia- the presence of viruses in the blood.
Cited references to follow up on	Service MW. A short history of early medical entomology. <i>J Med Entomol</i> . 1978;14(6):603–626. And 80 more
Follow up Questions	When would health officials decide to "interfere," with local mosquito populations, and what processes are undergone?

Article #18 Notes: Biology

Article notes should be on separate sheets

11/15/21

Source Title	Biology
Source citation (APA	AMCA. (n.d.). Biology. Retrieved from
Format)	https://www.mosquito.org/page/biology

Original URL	https://www.mosquito.org/page/biology
Source type	General article (quick fact needed for lit review)
Keywords	Mosquito Biology
Summary of key points (include methodology)	Chronological order of mosquito life
Research Question/Problem/ Need	Biology and life cycle of mosquito
Important Figures	N/A
Notes	 Egg raft Still and/or freshwater Sheltered from weather Larva Live in water Need oxygen Pupa Live in water Metamorphosis in this stage Adult Female mosquito need blood meal Male feed on nectar Most species bite during darker hours (dawn and dusk)
Cited references to follow up on	N/A
Follow up Questions	What are the different control methods developed so far that target the different stages?

Article #19 Notes: Irradiated Mosquitoes

11/15/21

Source Title	Irradiated Mosquitoes
Source citation (APA Format)	Irradiated Mosquitoes. (2020, December 01). Retrieved from <u>https://www.cdc.gov/mosquitoes/mosquito-</u> control/community/sit/irra diated.html#:~:text=How irradiated mosquitoes are used in mosquito control,not bite. The resulting eggs do not hatch
Original URL	https://www.cdc.gov/mosquitoes/mosquito-control/community/sit/irrad iated.html#:~:text=How%20irradiated%20mosquitoes%20are%20use d%20in%20mosquito%20control,not%20bite.%20The%20resulting% 20eggs%20do%20not%20hatch.
Source type	General article (quick fact needed for lit review)
Keywords	Mosquito Control Method
Summary of key points (include methodology)	Male mosquitoes bred and sterilized using x-ray
Research Question/Problem/ Need	What is a mosquito controlling method?
Important Figures	N/A
Notes	 Males sterilized Released back in wild to breed Does not reduce all mosquito populations, only targeted species Need to do yearly or mosquito populations stabilize back
Cited references to follow up on	N/A
Follow up Questions	How costly is this method?

Article #20 Notes: Statistics for Mosquito-Borne Diseases & Deaths

Source Title	Statistics for Mosquito-Borne Diseases & Deaths
Source citation (APA Format)	Bustamante, J. (2019, December 18). Mosquito Deaths & Mosquito Borne Disease Statistics [2021]. Retrieved from https://mosquitoreviews.com/learn/disease-death-statisti cs
Original URL	Mosquito Deaths & Mosquito Borne Disease Statistics [2021] (mosquitoreviews.com)
Source type	General article (quick fact needed for lit review)
Keywords	Mosquito, Deaths
Summary of key points (include methodology)	Document that gives statistics of mosquito's negative impact on humans.
Research Question/Problem/ Need	How many people are affected by mosquitoes annually

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Important Figures	
Notes	 2.7 million plus deaths per year Half a billion mosquito cases per year Wealth of nations related to cases (90% in Africa) Different transmitted diseases have different effects and are more/less fatal.
Cited references to follow up on	N/A
Follow up Questions	Are mosquito populations increasing and is this causing more cases each year?

Patent #1 Notes: Title

10/05/21

Source Title	Attracting mosquitoes for electrocution and/or trapping
Source citation (APA Format)	Wilbanks, A. D. (2010). U.S. Patent No. 7832140. Washington, DC: U.S. Patent and Trademark Office.

Original URL	https://www.freepatentsonline.com/7832140.pdf
Source type	patent
Keywords	Electrocution, mosquitoes
Basics of patent	The device mimics body heat of a living organism and also emits a mosquito attractant and finally has an airflow to suck in mosquitoes. The attractant is not specified as to what it can be.
Important Figures	
	FIG.9
	204 204 205 201 201 201 201 34 207 126 208 151 126 208 100 102 153 102 153 102 153
Notes	 Typical insect killing machines use light to attract mosquitoes Usually accidently kills other insects, some of which are beneficial to the environment Device creates heat gradient

	 Attractant the device may include- Aromatic Pheromone Moisture Uses resistive electrical conductors? to generate heat Moves part of trap to simulate moving creature Uses electricity to kill mosquito Has outer mesh Has airflow to disperse attractant Has airflow to suck in mosquitoes Vocab: Pheromone- a chemical substance produced and released into the environment by an animal, especially a mammal or an insect, affecting the behavior or physiology of others of its species.
Cited references to follow up on	Patents: 6530172 Apparatus for killing insects 2003-03-11 Lenz 6305122 Mosquito killing apparatus and mosquito trapping apparatus 2001-10-23 Iwao et al. And 40 more

Patent #2 Notes: Title

Source Title	Method for pest electrocution with disposable container
Source citation (APA Format)	Rivera, A. (2012). U.S. Patent No. 8099900. Washington, DC: U.S. Patent and Trademark Office.
Original URL	https://www.freepatentsonline.com/8099900.pdf
Source type	Patent
Keywords	Electrocution, mosquitoes
Basics of Patent	The device has a reusable power source, and the disposable part is cheap. The cheap disposable part is easily put in and taken out. The conductive part of the device is on stuck on the disposable part.

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Important Figures	(1,0)
Notes	 The reusable power source is a battery, and there is wiring to go into the device (is the battery rechargeable?) Power source high voltage low current What is low current? Electricity connected from power source to disposable part Disposable part flat On and off button Disposable part has opening for pest to enter 2+ conducting areas and 2+ conducting paths Female and male connectors?
Cited references to follow up on	 7832140 Attracting mosquitoes for electrocution and/or trapping 2010-11-16 Wilbanks 43/112 20080216387 Microencapsulated animal trap bait for electronic traps 2008-09-11 Peters And 7 more patents

Article #1 Notes: Title

Article notes should be on separate sheets

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Source Title	
Source citation (APA Format)	
Original URL	
Source type	
Keywords	
Summary of key points (include methodology)	

Research Question/Problem/ Need	
Important Figures	
Notes	
Cited references to follow up on	
Follow up Questions	