


 UNIVERSITY of WISCONSIN  
**GREEN BAY** | Marinette  
Campus

**Best** <sup>of</sup> **the Bay**  
**Presents**

**Posters by the Bay**

**May 2020**

The background features several decorative circles in shades of blue, brown, and orange. A large blue circle is in the top left, a large brown circle is in the top right, a medium orange circle is on the right side, and a large blue circle is in the bottom right. A large orange circle is partially visible on the left side, behind the text.

**Due to COVID-19 and the unprecedented closure of campus, Posters by the Bay has been made digital this year. Unfortunately this also caused a decrease in submissions. We are proud to showcase our students' hard work and are thankful for those who contributed.**

# Table of Contents

<b>GEOSCI 222, Ocean of Air: Weather and Climate.....</b>	<b>4</b>
<b>HUM BIO 217, Disease and Society.....</b>	<b>16</b>
<b>COMM SCI 146, GPS Spring Seminar.....</b>	<b>34</b>



# **GEOSCI 222**

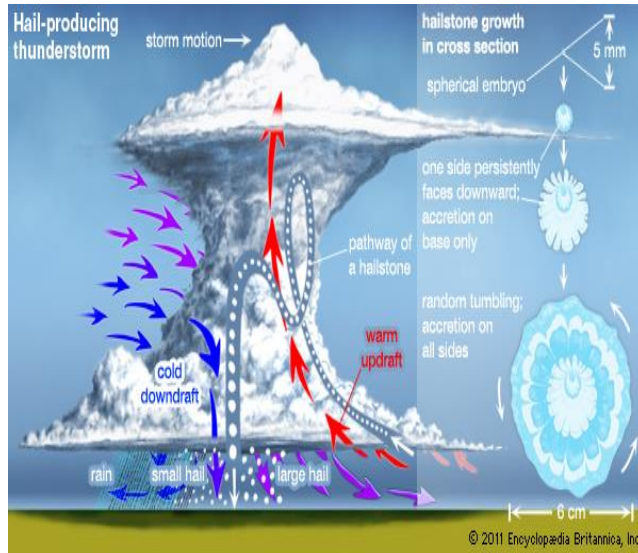
## **Ocean of Air: Weather and Climate**

<i><b>Thunderstorms, Anderson.....</b></i>	<b>5</b>
<i><b>Climate Change, Berth.....</b></i>	<b>6</b>
<i><b>Maritime and Continental Climates, Bjorkman.....</b></i>	<b>7</b>
<i><b>Thunderstorm, Lightning, and Tornado Facts &amp; Safety, Bulin.....</b></i>	<b>8</b>
<i><b>Tornadoes in Wisconsin, Fendryk &amp; Hayes.....</b></i>	<b>9</b>
<i><b>Thunderstorms, Florek &amp; Hurning.....</b></i>	<b>10</b>
<i><b>Tornados, Goneau &amp; Parrett.....</b></i>	<b>11</b>
<i><b>Tornado Alley, Hastings &amp; Ramsey.....</b></i>	<b>12</b>
<i><b>Acid Rain, Heath.....</b></i>	<b>13</b>
<i><b>Precipitation, Thomas &amp; Mosher .....</b></i>	<b>14</b>
<i><b>How Hailstorms Work, Wagner.....</b></i>	<b>15</b>

# Thunderstorms

By: Kyle Anderson

(Gnoodlum 2014)

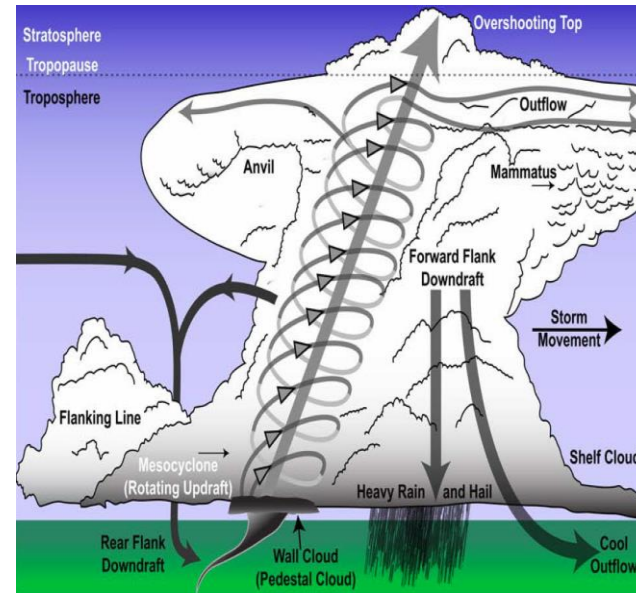


## About Thunderstorms

A thunderstorm is a rain shower during which you hear thunder. Also, lightning always occurs in a thunderstorm because thunder comes from lightning. Thunderstorms can also come along with many other characteristics such as high winds, hail, and even tornadoes. The image above shows a hail producing thunderstorm and how it works. Thunderstorms are most likely to occur during the spring and summer months, usually during the afternoon or evening hours. In some places, thunderstorms can occur any time of the day, while in other places these storms occur only in afternoon.

(NSSL 2020)

(Horstmeyer 2013)



## Thunderstorm Structure & Formation

The forming of thunderstorms is no different from other disturbances in the Earth's weather. A thunderstorm develops when the environment becomes unstable for vertical motion. These instabilities occur when relatively warm, light air is met by incoming cold, heavy air. The warm air starts rising and continues to do so in the presence of the cooler air it encounters. Thunderstorms develop when deep cells of moist convection become organized and merge. This leads to precipitation and ultimately to thunder and lightning.

(Krider 2016)

(EarthSky 2012)



## What Causes Thunder?

Thunderstorms happen all around the world and are a frequent occurrence in North America, especially in the Midwest. The loud booming of thunder and a bright strike of lightning brings up the question: what really causes thunder? Thunder is caused by lightning. Lightning is basically a stream of electrons flowing between or within clouds. The air around the electrons can be heated up to 50,000 degrees Fahrenheit. As this hot air cools it forms a tube of partial vacuum surrounding the lightnings path. The air then rapidly expands and contracts which causes vibration. This vibration ends up causing a huge cracking noise. The only reason we see lightning before we hear thunder is because the speed of sound in air is slower than the electron flow of the lightning.

(Brill 2002)

# Climate Change



(NASA 2020)

One of the leading causes of climate change is global warming. Global warming is the result of accumulating greenhouse gases in the atmosphere that are slowly warming the planet. This is a major contributor to climate change.

What is climate change?  
Climate change is the change in global environments such as global warming heating up the atmosphere. Climate change is usually a natural process; however, this process is being accelerated.



(USGS 1997)

Another form of climate change is called desertification. This involves much of the land becoming deserts. For example, the Sahara Desert in Africa is slowly expanding due to the land drying up.



Maritime and Continental climates are very unique and influence weather patterns quite differently. The boundary between the modern maritime Cfb and continental Dfb climatic zones, according to the Köppen-Geiger classification, is not stationary, but shift in space and time. (Breitenbach et al. 2019)

## Continental Climate



(Kiprop 2010)

- Commonly contains fairly dry air masses.
  - Example: A coastal city like San Francisco has a small range of temperature throughout the year. (NASA Science 2020)
- Annual range of air temperatures can be great.
- Weather varies less day to day and is less extreme. (West 2019)

## Maritime Climate



(Braine 2010)

- More average moisture content due to locations next to water.
  - Example: A mid-continental city like Fargo, ND has a very wide range of temperatures. (NASA Science 2020)
- Annual range of air temperatures is less than continental climates due to increased cloud cover.
- Weather varies greatly from day to day and can become extreme. (West 2019)

# THUNDERSTORM, LIGHTNING, AND TORNADO FACTS & SAFETY



(NWS 2020)

Johnny Autery

## **THUNDERSTORMS**

Lighting - can cause injuries, destruction, and occurs with all thunderstorms.

Tornadoes - has wind speeds ranging up to 200 mph, injuries, and destruction.

Straight line winds - just as bad as tornadoes, destruction, and extremely dangerous to aviation.

Floods, Hail, Etc.

(NWS 2000)

## **Every Thunderstorm Needs...**

Moisture - to form clouds and rain.

Unstable air - warm air that rises rapidly.

Lift - caused by cold/warm fronts, sea breezes, mountains, or sun's heat.

(NWS 2000)



(NWS 2020)



## **Tornadoes**

.They can occur at anytime of day and any day of the year.

.The SAFEST place is underground shelter.

.Remaining alert for warning signs is very important.

(NWS 2020)

## **Warning Signs..**

.Dark/Greenish Sky

.Large Hail with absence of rain

.Loud roar similar to a freight train

.Wall clouds or an approaching cloud of debris

(NWS 2000)

## **Tornado Types..**

.There are 3 types of tornadoes...

**.Weak, Strong, and Violent**

.Its wind speeds can reach up to 200 mph!

(NWS 2000)



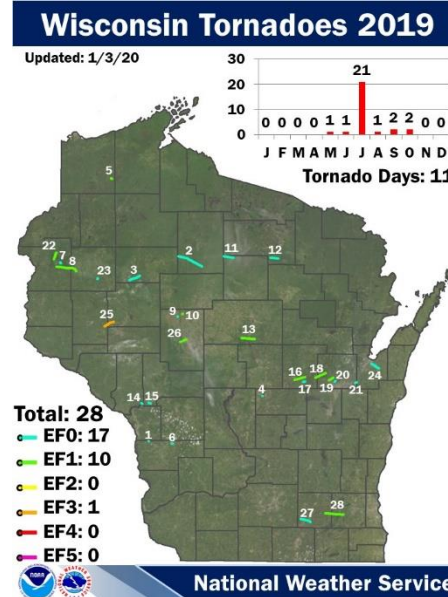
(0202 SWN)

Wikimedia/Justin Hobson

**Weather.gov/safety gives endless possibilities on staying safe during any situation!**

**By Kianna Bulin**



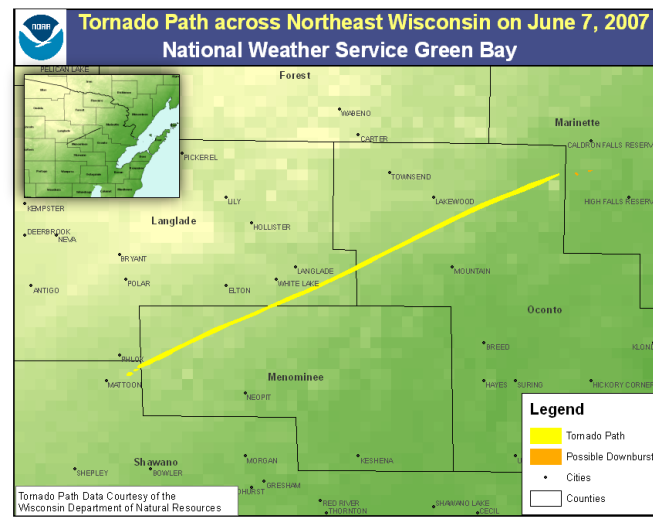


#	Date	County	Location	Mag	Length	Width	Death/Inj
1	5/24	Vernon	Coon Valley	EFO	0.15mi	20yd	0/0
2	6/14	Price	Ogema	EFO	17.4mi	50yd	0/0
3	7/4	Rusk	Weyerhaeuser	EFO	7.7mi	100yd	0/0
4	7/16	Waushara	Plainfield	EFO	0.08mi	10yd	0/0
5	7/18	Douglas	Gordon	EF1	1.3mi	80yd	0/0
6	7/18	Vernon	Westby	EFO	0.5mi	85yd	0/0
7	7/19	Polk	Range	EFO	0.9mi	80yd	0/0
8	7/19	Polk/Barron	Almena	EF1	13.9mi	600yd	0/0
9	7/19	Clark	Thorp	EFO	0.23mi	30yd	0/0
10	7/19	Clark	Owen	EF1	0.28mi	40yd	0/0
11	7/19	Lincoln	Tripoli	EFO	6.54mi	50yd	0/0
12	7/19	Oneida	Rhineland	EFO	5.43mi	50yd	0/0
13	7/19	Marathon	Mosinee	EF1	9.0mi	100yd	0/0
14	7/20	Trempealeau	North Bend	EFO	0.8mi	50yd	0/0
15	7/20	Jackson	North Bend	EFO	1.6mi	50yd	0/0
16	7/20	Waupaca	Waupaca	EF1	7.57mi	80yd	0/0
17	7/20	Waupaca	Weyauwega	EFO	1.15mi	50yd	0/0
18	7/20	Waupaca/Outag	New London	EF1	7.55mi	90yd	0/0
19	7/20	Outagamie	Hortonville	EF1	3.5mi	75yd	0/0
20	7/20	Outagamie	Greenville	EFO	0.72mi	50yd	0/0
21	7/20	Outagamie	Kaukauna	EFO	1.1mi	50yd	0/0
22	7/28	Polk	Luck	EF1	4.8mi	100yd	0/0
23	7/28	Barron	Hillsdale	EFO	0.43mi	25yd	0/0
24	8/7	Brown	Green Bay	EFO	6.2mi	90yd	0/0
25	9/24	Dunn/Chippewa	Elk Mound	EF3	7.02mi	600yd	0/2
26	9/24	Clark	Greenwood	EF1	4.71mi	60yd	0/0
27	10/1	Jefferson	Fort Atkinson	EFO	7.23mi	80yd	0/0
28	10/1	Jeff/Waukesha	Ottawa	EF1	13.0mi	100yd	0/0

(NWS 2019)

A tornado is a strongly rotating column of air that extends from within severe thunderstorms down to the ground. This whirlwind usually takes the form of cloud droplets that form a funnel and may have dust and debris circling around the vortex. The size of a funnel may not give a true indication of the strength of the tornado (Miller, et al 1983)

# TORNADOES IN WISCONSIN



(NWS 2007)

In 2007, one of the largest tornadoes Wisconsin had ever seen took place. The tornado was on the ground for at least 40 miles and was over 1/2 mile-wide at times. The twister caused EF2 damage four miles north of the city of Mountain, with estimated winds of around 130 mph. The width of the tornado in this area was almost 1/2 mile.

(NWS 2007)



(NWS 2007)

Desirae Hurning

# THUNDERSTORMS

Paige Florek



(NSSL 2020)

## What *is* a thunderstorm?

- Classified as a rainstorm with thunder and lightning (NSSL 2020)
- Three types (UCAR 2020) :
  1. single cell (ordinary, common storm; single convection cell)
  2. multi-cell (storm formed in a line and associated with strong winds; multiple convection cells)
  3. supercell (largest, most severe storm; rotating updrafts)
- Common in summer months of the mid latitudes as well as the tropics (STCMS 2017)
  - Requires a wet environment or rain (Visher 1948)

## How is a thunderstorm *created*?

- Convection: the transfer of heat energy in a vertical direction (NSSL 2020)
- Often formed by a cold front and a warm front meeting (frontal thunderstorm)
  - causes warm air to rise and reach dew point (UCAR 2020)
- Strong updrafts and strong downdrafts
  - creates a storm cell (UCAR 2020)

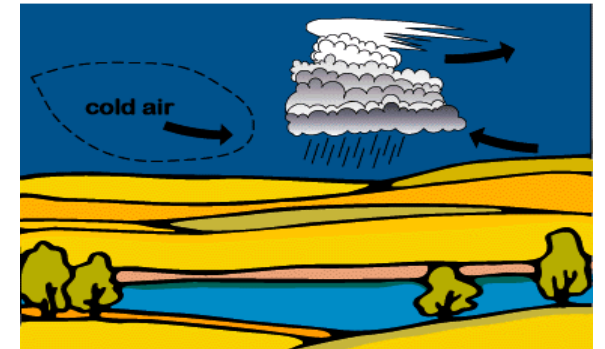


(NSSL 2020)

## What are the *effects* of thunderstorms?

- Increased rainfall (Visher 1948)
- Fires to crops, buildings, and forests due to lightning (NSSL 2020)
- Potential flooding (NSSL 2020)
- Extremely strong winds, which can uproot trees (NSSL 2020)
- Possible tornadoes (from supercell thunderstorms) (Guarriello, Nowotarski, and Epifanio 2018)

Frontal Thunderstorm



(UCAR 2020)

# Tornadoes

## How Do They Form?

A tornado is a violently rotating column of air that extends from a thunderstorm to the ground. The denser cold air is pushed over the warm air, usually producing thunderstorms. The warm air rises through the colder air, causing an updraft. The updraft will begin to rotate if winds vary sharply in speed or direction.



## How Destructive are they?

Every year in the United States, tornadoes do about 400 million dollars in damage and kill about 70 people on average. Extremely high winds tear homes and businesses apart. Winds can also destroy bridges, flip trains, send cars and trucks flying, tear the bark off trees, and suck all the water from a riverbed. High winds sometimes kill or injure people by rolling them along the ground or dropping them from dangerous heights.



## What To Do/Prepare

If you can safely get to a sturdy building, then do so immediately. Go to a safe room, basement, or storm cellar. If you are in a building with no basement, then get to a small interior room on the lowest level. Stay away from windows, doors, and outside walls. Do not get under an overpass or bridge. You're safer in a low, flat location. Watch out for flying debris that can cause injury or death. Use your arms to protect your head and neck.



Nate Goneau, Nick Parrett



# Tornado Alley: By Chase Ramsey and Jonathan Hastings

## What is a Tornado?



(Imster 2018)

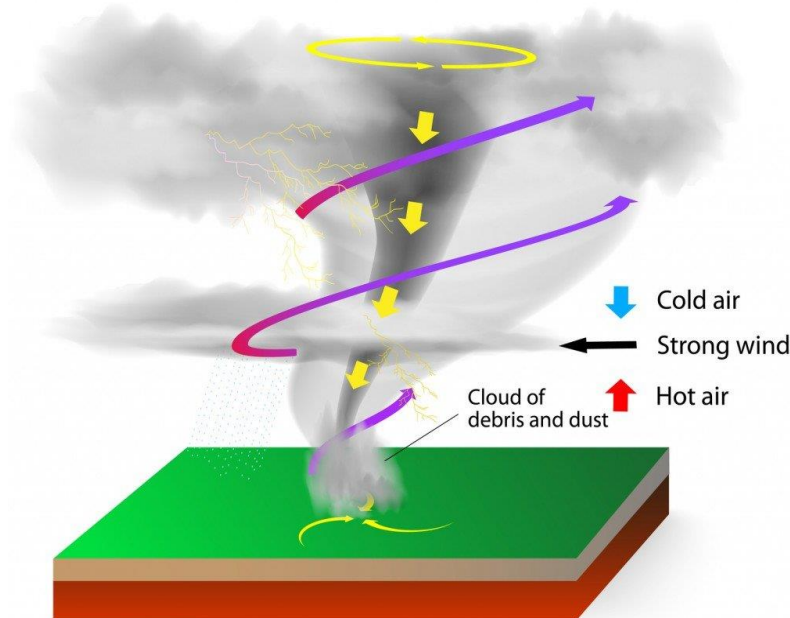
A tornado is typically formed by a supercell thunderstorm. This starts when humid air rises and meets cold air in the atmosphere above. The air creates spinning columns of strong wind that spin above the space where the hot and cold air meet. This makes a low pressure center.

(Markowski and Richardson 2014)

## What is Tornado Alley?

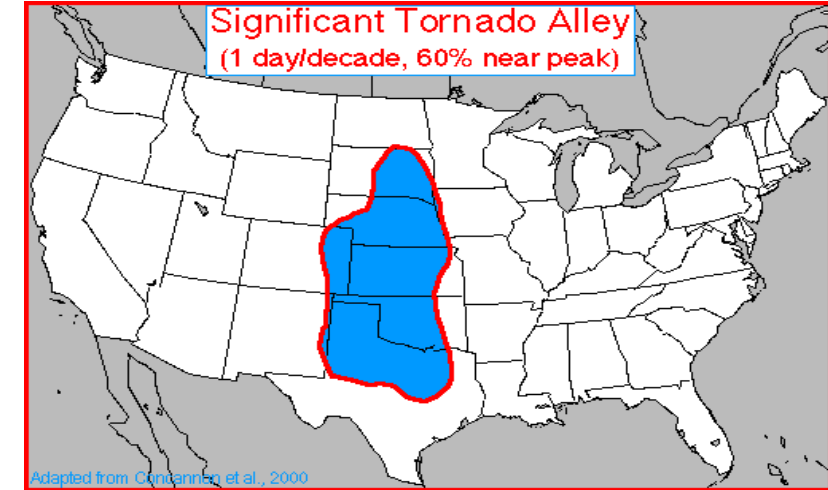
Tornado Alley is an area in the midwest that has a very high potential and amount of tornadoes. While it is not an official area, the states typically included are Texas, Oklahoma, Kansas, Nebraska, Missouri, Iowa, and South Dakota.

(Boruff, et al 2003)



(Tenenbaum 2014)

## Why is Tornado Alley a Hotspot?



(UCAR 2020)

Tornadoes form in Tornado Alley because of a number of factors. The Great Plains are a good surface for the winds to travel over due to how flat they are. The alley is a central point for the cold, Canadian air, warm, moist air of the Gulf of Mexico, and the dry air from the Rocky Mountains to all converge.

(UCAR 2020)

# Acid Rain

## What is Acid Rain?

Acidic rain is precipitation that contains acidic components. Nitrogen dioxides and sulfur dioxides react with the moisture in the air, creating nitric and sulfuric acids. These acids then fall back to earth in the forms of rain, snow, sleet, hail, or even dust. Most acid rains are formed by the burning of fossil fuels, while a small amount is created by natural sources, such as volcanos.

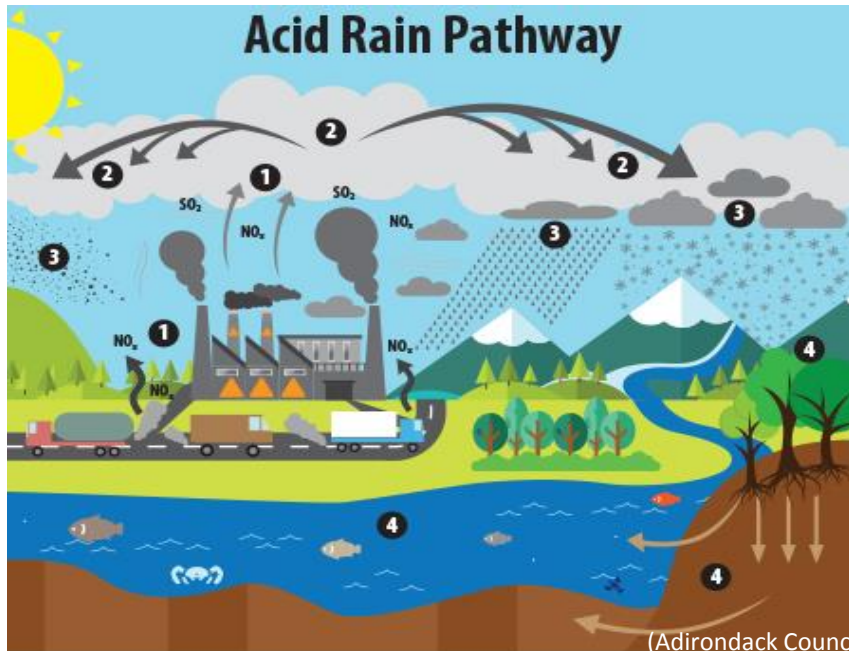


## What's Being Done?

Over the years, many regulations have been put into place to reduce the amount of emissions that create acidic rain. Coal burning factories are also looking at ways to burn cleaner. They go through a process of “washing” the coal to remove some of the sulfur before it is burned. However, even with the lowered emissions, the amount of time it is predicted to take lakes that have an acidic PH balance to return to normal could take hundreds of years. In recent years, there has also been a relaxing of laws to protect against acid rain. This could result in more damage to ecosystems throughout the country. (Adirondack Council 2020) (Sidder 2018)

## Effects of Acid Rain

When acid rain falls into an ecosystem, it acidifies the water in the area. This ends up killing many of the wildlife. Acid rain also creates a lot of damage in urbanized areas. It has the ability to eat away at statues and buildings, erasing history and attacking the structural integrity of buildings.



This image illustrates the pathway for acid rain in our environment: (1) Emissions of  $\text{SO}_2$  and  $\text{NO}_x$  are released into the air, where (2) the pollutants are transformed into acid particles that may be transported long distances. (3) These acid particles then fall to the earth as wet and dry deposition (dust, rain, snow, etc.) and (4) may cause harmful effects on soil, forests, streams and lakes.

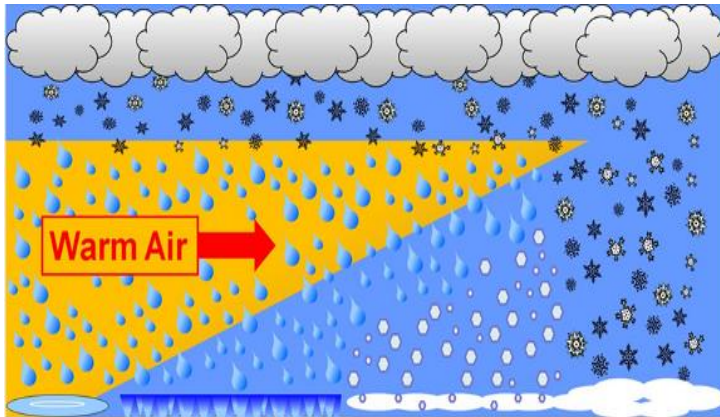


Elisha Heath

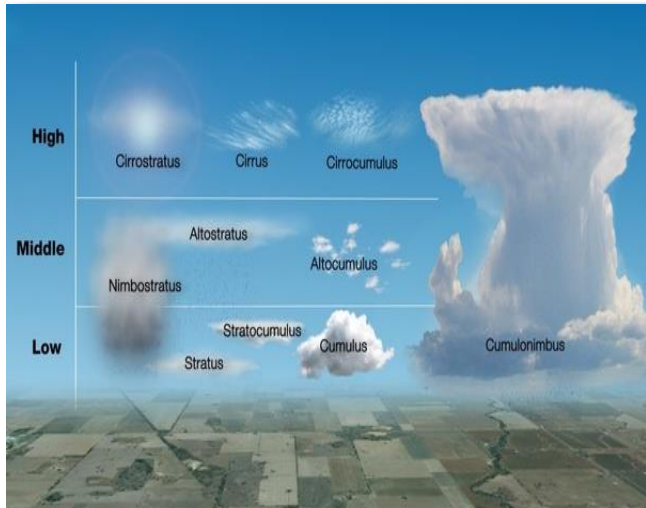


# Precipitation

## Types of Precipitation



Rain	Freezing Rain	Sleet	Snow
Frozen precipitation melts and reaches the ground as rain.	Frozen precipitation melts in warm air. Rain falls and freezes on cold surfaces.	Frozen precipitation melts in shallow warm air. Then refreezes into sleet before reaching the surface.	Snow falls through cold air and reaches the surface



**Precipitation** -is any product of the condensation of atmospheric water vapor that falls under gravity from clouds.

## Cloud types associated with precipitation

Altostratus- Nil, Unless castellanos, then light showers of rain or snow

Stratocumulus- Rain or snow, of very light intensity or drizzle

Cumulonimbus- Showers of rain, hail, snow and snow pellets

Stratus- Drizzle or snow or snow grains

Towering cumulus- Showers of rain, or snow or snow pellets

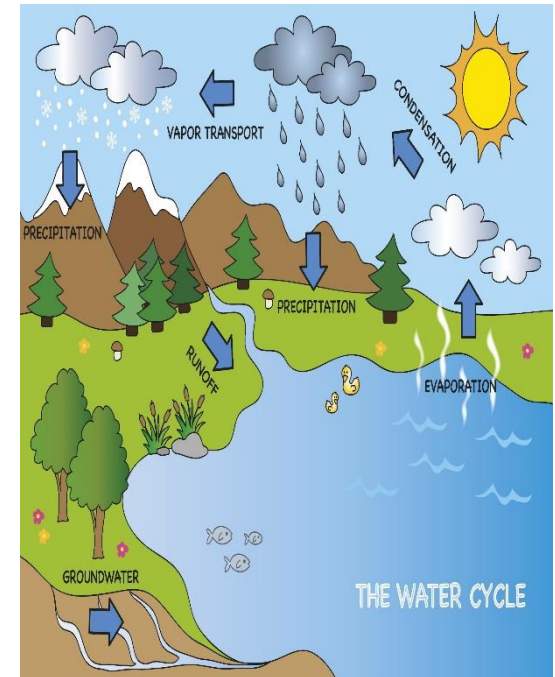
Altostratus- rain or snow or ice pellets

Nimbostratus- rain or snow or ice pellets

Cumulus- Showers of rain or snow

## Water cycle

**Precipitation occurs**- when water-laden air cools, causing the water to condense back into its liquid form and fall as rain. In order to acquire the water in the first place, warm air must flow over a body of water. When this happens, the molecules of water enter the gaseous state, forming clouds that float through the atmosphere.



# How Hailstorms Work

## What are they?

- They're storms that involve hail (a type of precipitation that's made up of solid ice) and are created inside thunderstorm updrafts. (NSSL 2020)

## How much do they occur and where?

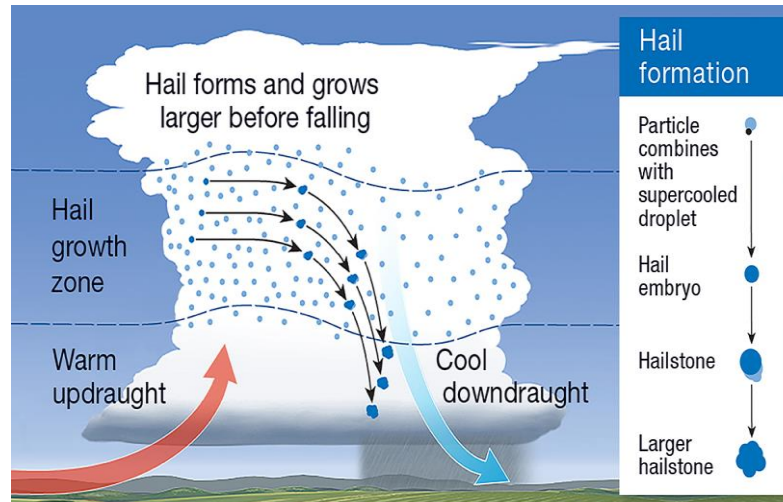
- Parts of the southwest desert have less than one hail day per year and the mountains of Wyoming have more than 5 hail days. (Changnon, Changnon and Hilberg 2009)
- Florida and the Gulf Coast barely have hail due to hailstones melting from high air temperatures before hitting the ground. (Changnon, Changnon and Hilberg 2009)



(NSSL 2020)

## How do they form?

- Inside the thunderstorm's updraft into the cumulonimbus cloud, there's water vapor that's condensed into water droplets. (BOM 2018)
- Water droplets are brought up into the cloud's really cold atmosphere and super-cooled, which is when the droplet temperature is below 0 degrees Celsius. (BOM 2018)
- The droplets freeze into hail embryos, which are smaller ice balls that touch small air particles. (BOM 2018)
- The hail growth zone (the middle of the cloud) creates hailstones as hail embryos come into contact with super-cooled water droplets and freeze. (BOM 2018)
- As the hailstones get bigger, gravity will let them fall to the ground. The falling also depends on air friction and other hailstones and rain drops. (Picazo 2018)



(BOM 2018)

## What damage can occur?

- There can be damage, such as homes, cars, aircrafts, people, and livestock. (NSSL 2020)
- Even in 1593, 18 to 20-pound hailstones caused crop, church, castle, and house damage.
- (Ismailov 2014)

## How big can hail get? For each size, what updraft speed is needed for it to form?

Hailstone size	Measurement		Updraft Speed	
	in.	cm.	mph	km/h
bb	< 1/4	< 0.64	< 24	< 39
pea	1/4	0.64	24	39
marble	1/2	1.3	35	56
dime	7/10	1.8	38	61
penny	3/4	1.9	40	64
nickel	7/8	2.2	46	74
quarter	1	2.5	49	79
half dollar	1 1/4	3.2	54	87
walnut	1 1/2	3.8	60	97
golf ball	1 3/4	4.4	64	103
hen egg	2	5.1	69	111
tennis ball	2 1/2	6.4	77	124
baseball	2 3/4	7.0	81	130
tea cup	3	7.6	84	135
grapefruit	4	10.1	98	158
softball	4 1/2	11.4	103	166

(NOAA 2020)



# HUM BIO 217

## Disease and Society

<b><i>Auto-Brewers Syndrome</i>, Jepson.....</b>	<b>17</b>
<b><i>African Sleeping Sickness</i>, Maxey, Block, &amp; Cross.....</b>	<b>18</b>
<b><i>Bell's Palsy</i>, Wagner &amp; Rose.....</b>	<b>19</b>
<b><i>Breast Cancer</i>, Miller &amp; Corey.....</b>	<b>20</b>
<b><i>Dementia</i>, Uecke, Barrette, &amp; Berger.....</b>	<b>21</b>
<b><i>Type 1 Diabetes</i>, Fendryk, Goneau, &amp; Plotzeck.....</b>	<b>22</b>
<b><i>Hand, Foot, and Mouth Disease</i>, Allen, Allen, &amp; Moberg.....</b>	<b>23</b>
<b><i>Hutchinson Gilford Progeria</i>, Jennings, Walters, &amp; Nicklaus.....</b>	<b>24</b>
<b><i>Kuru</i>, Anderson, Burnett, &amp; Sievert.....</b>	<b>25</b>
<b><i>Lassa Fever</i>, Kramer.....</b>	<b>26</b>
<b><i>Lymphatic Filariasis</i>, Lindbom &amp; Graves.....</b>	<b>27</b>
<b><i>Mononucleosis</i>, Mongin.....</b>	<b>28</b>
<b><i>Rabies</i>, Marquardt &amp; Burns.....</b>	<b>29</b>
<b><i>Sever Acute Respiratory Syndrome</i>, Katzback.....</b>	<b>30</b>
<b><i>Scabies</i>, Laatsch.....</b>	<b>31</b>
<b><i>Scurvy</i>, DeForge &amp; Rebbie.....</b>	<b>32</b>
<b><i>Swine Flu</i>, Kaempff, Freerking, &amp; Koehler.....</b>	<b>33</b>



# Auto-Brewery Syndrome

**Summary:** Auto-brewery Syndrome, or Gut Fermentation Syndrome, the official name, is a disorder where fungus or bacteria converts carbohydrates into alcohol in your intestines. This has led to patients being arrested. (Cordell 2019) This can cause people to display signs of intoxication despite having little or no alcohol.



Figure 1. *Candida albicans*, one of the causal agents. Nutritionreview.org 2019

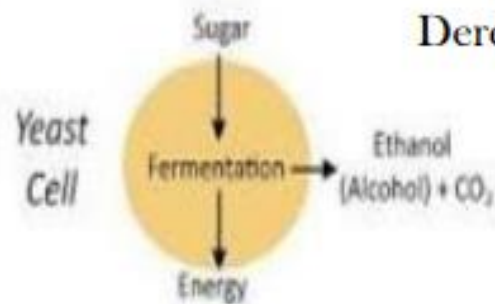


Figure 4. Yeast Cell Hanson 2019

**Causal Agent:** Auto-brewery syndrome can be caused by several different organisms. Yeast such as *Saccharomyces cerevisiae* and various strains of the fungi *Candida*. The bacteria *Klebsiella pneumonia* and *Enterococcus faecium* are believed to cause ABS in rare cases. (Cordell 2019)

**Symptoms:** Patients with IBS report a variety of minor health issues related to digestion (see Fig.2 for a few examples) but the primary symptom is that of alcohol intoxication from eating carbohydrates. (Cordell 2019)

**Treatment/Prevention:** There is currently no cure for auto-brewery syndrome. Symptoms come from consuming high amounts of carbohydrates, so strict diet control is the first step for prevention of symptoms. Antifungal therapy is also done to help prevent symptoms. (Guo 2017)

**References:** Guo et al 2017 The case study of one patient with gut fermentation Syndrome: case report and review of the literature  
 Welch et al 2016 Auto-brewery Syndrome in the Setting of Long-standing Crohn's Disease: A Case Report and Review of the Literature  
 Cordell et al 2019 Auto-brewery Syndrome (Gut Fermentation)

Derek Jepson

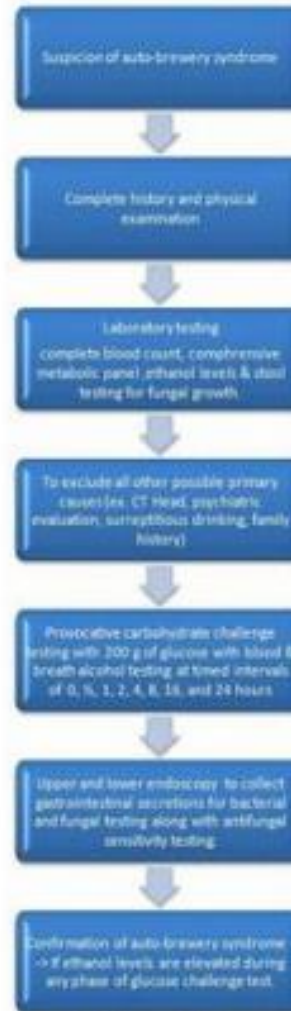


Figure 3. Protocol for detecting ABS. Malik et al 2019

**Effect of Auto-Brewery Syndrome on Society :** Auto-brewery syndrome is still a rare and possibly underdiagnosed disease. ABS was once thought to be the cause of SIDS, though this was disproven. People with ABS often face social stigmas about alcoholism and are sometimes diagnosed only after they've been arrested for drunk driving after eating a sandwich. (Cordell 2019)

Question No.	Shortened Question	P	Interpretation
31	Bowel movements per day	.0178	Those with GFS symptoms have more frequent bowel movements.
32	Bowel quality	.0477	Those with GFS symptoms have more frequent diarrhea.
34	Breath odor	<.0001	Those with GFS symptoms have people state they have breath odor at a far greater rate than those without symptoms.
37	Raise your health	.0080	Those with GFS symptoms rate themselves in worse health at a greater rate than those without symptoms.
39	Water consumption	.0380	Those with GFS symptoms consume 64+ ounces of water per day at a higher rate.
46	Tea/Coffee	.0334	Those with GFS symptoms consume tea/coffee at a less rate.
50	Dairy	.0185	Those with GFS symptoms tend to eat dairy products at a less rate than those without symptoms.
52	Snack	.0008	Those with GFS symptoms tend to eat snack at much less rate than those without symptoms.
53	Eat out	.0432	Those with GFS symptoms eat food prepared away from home at a less rate.
54	Eat candy	.0321	Those with GFS symptoms eat chocolate and candy at a less rate.
69	Food sensitivity	.0403	Those with GFS symptoms have been tested and removed offending foods at a higher rate.
70a	Yeast in GI tract	.0153	Those with GFS symptoms have had intestinal fungal overgrowth at a higher rate than those without symptoms.
74	How long medications for acne	.0171	Those with GFS symptoms who need medication for acne have taken it longer.

Abbreviations: GFS, Gut Fermentation Syndrome; GI, gastrointestinal.  
 Figure 2. Lifestyle survey showing differences between ABS and regular. Cordell et al 2019

**Effect of Society on Auto-Brewery Syndrome:** Much like auto-brewery syndrome's effect on society, society's effect on ABS is still relatively minor. The disease has become more prevalent in recent years, though still rare, as our diets continue to include high amounts of carbohydrates. Studies on the disease are very recent, many having been done in only the last few years.



# African Sleeping Sickness

By David Maxey, Serenity Block, and T Cross

## Causal Agent

Agent is a parasite (*T. brucei gambiense* or *rhodesiense*) (Fig. 3 and 4) that can be transmitted by the tsetse fly which is a blood sucking fly, native to Africa. The parasite can be passed congenially, and through rare forms of transmission which includes sexual activity, lab accidents, blood transfusion, organ transplantation (Busher 2017).

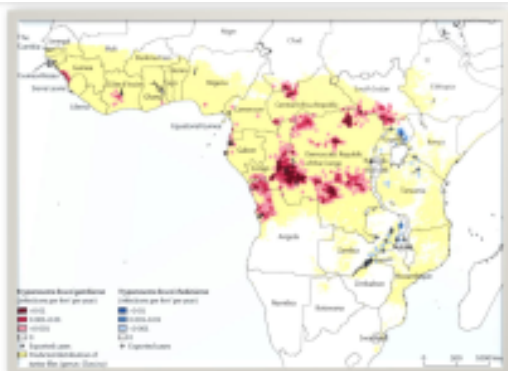


Figure 1. Map of transmission by type (Busher 2017)

## Symptoms

Symptoms vary in frequency between *T. brucei gambiense* and *rhodesiense*. Incubation period is shorter in travelers than in locals. Stage 1 consists of the hemolymphatic stage which includes a weeklong fever which will come back within days or months, and lymph node problems, itching, and headaches (Busher 2017). Stage 2 is the meningoencephalitic stage where fewer fevers occur, along with daytime sleepiness, night insomnia, and motor control issues with mental changes (Busher 2017).



Figure 2. Life cycle of parasite (Busher 2017)

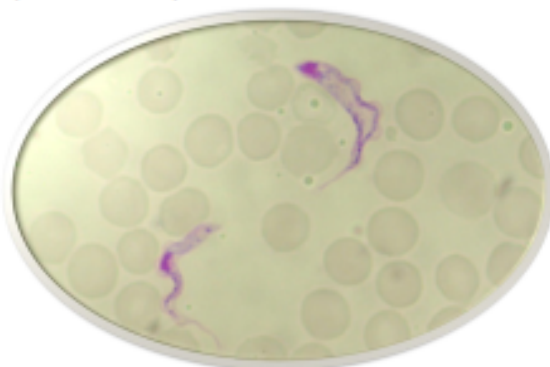


Figure 3. Microscopic view of parasite (Busher 2017)



Figure 4. Tsetse fly (Image courtesy of Geoffrey Attardo)

## The Effect of African Sleeping Sickness on Society

People can die early because of lack of money or medical needs for treatment without which they would have a near 100% of dying. If people were able to get treatment, they would go farther into poverty because of medical expenses. People would start wearing longer, thicker clothing with neutral color because the tsetse fly is attracted to bright clothing (CDC 2012). Since the beginning of the 1900's the African sleeping sickness has killed millions of people, mostly in rural areas of Africa (Busher 2017). As of 2014 the estimate number of deaths per year was 50,000 to 500,000 (WHO 2020).

## The Effect of Society on African Sleeping Sickness

People with more livestock are more vulnerable to get bitten, and because it became a problem people sprayed insecticide on their livestock (Cecchi, Barret 2008). Suraman, Pentamidine, and Melarsoprol were developed for fighting against African Sleeping Sickness (Steverding 2010).

## References

- Busher, P., Cecchi, G., Jamonneau, V & Priotto G. (2017). Human African trypanosomiasis. *The Lancet*, 390(10110), 2397-2409. doi: 10.1016/S0140-6736(17)31510-6
- Parasites – African Trypanosomiasis (also known as Sleeping Sickness). (n.d.) Retrieved 3 9, 2020, from Centers for Disease Control and Prevention: <https://www.cdc.gov/parasites/sleepingsickness/biology.html>
- Cecchi, F., & Barret, M. (2008). African Sleeping Sickness. *BMJ: British Medical Journal*, 336(7646), 679-680. Retrieved April 27, 2020, from [www.jstor.org/stable/20509309](http://www.jstor.org/stable/20509309)
- Crawford, K., Lancaster, A., Oh, H., & Rychtar, J. (2015). A Voluntary Use of Insecticide-Treated Cattle can Eliminate African Sleeping Sickness. *Letters in Biomathematics*, 2(1), 91-101. doi: <https://doi.org/10.1089/23737867.2015.1111777>
- Trypanosomiasis, human African (sleeping sickness). (2020, January 17). Retrieved from [who.int/en/news-room/fact-sheets/detail/trypanosomiasis-human-african-\(sleeping-sickness\)](http://who.int/en/news-room/fact-sheets/detail/trypanosomiasis-human-african-(sleeping-sickness))
- Steverding, D. (2010). The development of drugs for treatment of sleeping sickness: A historical review [Abstract]. *Parasites*

## Treatment/Prevention

Very easy to treat during first stage, but difficult to treat during the second stage (Cecchi, Barret 2008). If untreated there is a nearly 100% mortality rate within one to four years (Cecchi, Barret 2008). Two drugs are available for treatment which are Melarsoprol which has a cure rate under 70%, and Eflornithine which is more effective than the alternative (Cecchi, Barret 2008). Prevention included wearing different clothing to avoid

## Summary

African Sleeping Sickness is a deadly parasitic disease which can have terrible effects on the body. Drastic changes came for those who got the disease. Treatment was hard to come by because of medical care being hard to afford and not always being readily available. Treatment also was available in the form of two drugs for stage two, one being Melarsoprol and the other being Eflornithine. Prevention involved avoiding the attraction of the tsetse fly with the usage of uncommon clothing and insect repellent.



**CAUSAL AGENT:** Bell's palsy is a paralysis or weakness on one side of the face that results from the facial nerve getting swollen and happens when the nerve signals that make the facial muscles function can't be sent (Figure 1) (FPUK 2019a). This is linked to other conditions, such as Lyme disease and mumps, but the herpes simplex virus, which makes cold sores, is suspected to be the possible cause (Barrett, Carson-Dewitt, & Davidson 2015).

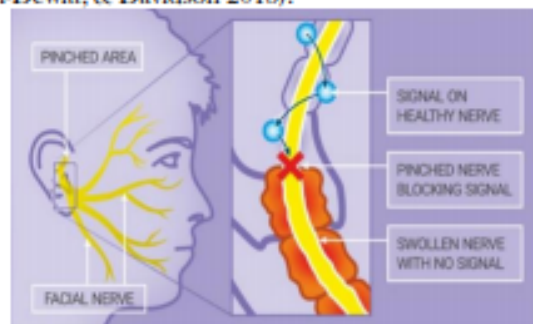


Figure 1. The formation of Bell's palsy (FPUK 2019a)

**SYMPTOMS:** Symptoms before facial weakness or paralysis include facial muscle twitches, drooling, an altered state of taste, difficulty eating, numbness or pain behind the ear, the eye watering less or more than normal, and not being able to blink or close the eyelid on one side of the face (Lava 2018). After one to two days of this, facial droopiness reaches its highest point on the same side (Figure 2) (Zandian et al., 2014). Bell's palsy typically lasts for two weeks and recovers in three months, but some individuals need a longer time to recover or have symptoms that are rare and permanent (Lava 2018).

**TREATMENT/PREVENTION:** Many individuals with this unpreventable condition don't need treatment, but different options still relieve facial troubles (NORD 2005). While massages and electric stimulation can improve facial muscle function and tone, steroids (prednisone) can help with facial canal widening (NORD 2005). Also, eye protection, such as patches or drops, help if people can't close their eye (NORD 2005). However, surgery can be done in cases that are severe, so the eyelid is slightly or completely closed or the facial nerve regains some muscle function (NORD 2005).

# Bell's Palsy

By Allison Wagner  
And Keith Rose

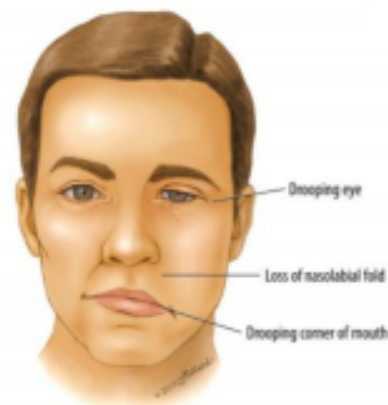


Figure 2. Bell's palsy facial droopiness (Zandian et al., 2014)

## In the media

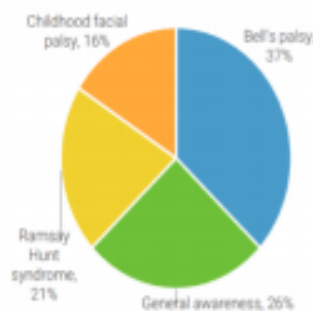


Figure 3. Types of facial palsy that got media coverage for a year until June 30, 2019 (FPUK 2019b)



Figure 4. Types of media that covered facial palsies for a year until June 30, 2019 (FPUK 2019b)

**THE EFFECT OF BELL'S PALSY ON SOCIETY:** Bell's palsy can affect people of any gender and all ages (NORD 2005). However, people are more likely to develop it if they're elders, pregnant women, or with upper respiratory problems or diabetes (NORD 2005). In the United States, 25 to 35 out of 100,000 people get Bell's Palsy, which adds up to 40,000 individuals a year (NORD 2005). 7% of cases result in repeated episodes of Bell's palsy, which happen 10 years after the first incident (Patterson & Adams 2012). Also, no matter how long they have it, people with Bell's palsy can experience psychological distress. They can have low self-esteem or high levels of anxiety because of how they look. Online or offline, it feels like they can't be themselves without being judged or won't ever be completely better. Even loved ones of Bell's palsy patients can feel hopeless when they try to help improve their confidence and happiness.

**THE EFFECT OF SOCIETY ON BELL'S PALSY:** Our society has brought awareness to Bell's palsy. Social media can be a toxic place for people with Bell's palsy when seeing individuals without it or rude comments on pictures taken of themselves or others alike. Despite this, there's a positive online environment. There are organizations that educate people about different facial palsies through facts and personal stories while raising money for research purposes. Also, people with Bell's palsy and other facial palsies can communicate with one another as a community. There's even one charity named Facial Palsy UK that has volunteers that specialize in spreading awareness for a few facial palsies (Figure 3) and use media outlets to get their message across (Figure 4) (FPUK 2019b).

**SUMMARY:** Bell's palsy is a type of facial palsy where the facial nerve is blocked from receiving the proper signals. It's unpreventable and suspected to happen due to the herpes simplex virus. It leads to symptoms from drooling to droopiness on one side of the face, which last for 2 weeks or longer. Bell's palsy can affect anyone physically and psychologically, whether it's online or offline. Solutions that help people include treatments from massages to surgeries and awareness platforms.

## References

Barrett, Julia, Carson-Dewitt, Rosalyn, & Davidson, Tish. 2015. Bell's Palsy.  
Facial Palsy UK (FPUK). 2019a. Bell's palsy.  
Facial Palsy UK (FPUK). 2019b. Facial Palsy UK Annual Report and Unaudited Financial Statements For the Period Ended 30 June 2019.

Lava, Neil. 2018. What Are the Symptoms of Bell's Palsy?  
National Organization for Rare Disorders (NORD). 2005. Bell's Palsy.  
Patterson, Irene, & Adams, Victoria. 2012. Bell's palsy treatment and recovery.

Zandian, Anthony, Osiro, Stephen, Hudson, Ryan, Ali, Irfan M., Matusz, Petru, Tubbs, Shane R., & Loukas, Marios. 2014. The neurologist's dilemma: A comprehensive clinical review of Bell's palsy, with emphasis on current management trends.





Figure 1. Pink ribbon (Harvard Health 2020)

**CAUSAL AGENT:**

Breast cancer is caused when some cells in the breast begin to grow abnormally. It often happens in women's milk producing ducts. However, scientists still cannot pinpoint exactly what causes breast cancer. It is likely a variety of genetic makeup and your environment.

**SYMPTOMS:**

- Change in size of breast
- Lump or thicker skin on the breast
- A newly inverted nipple
- Peeling or flaking of the areola
- Discoloration such as reddening of the breast



Figure 2. 11 symptoms of breast cancer (MD Anderson 2019)

# Breast Cancer

By: Marie Miller & AJ Corey



Figure 3. Breast cancer facts (NBCF 2019)

**TREATMENT/PREVENTION:**

- Receive a yearly mammogram starting at age 45 (ACS).
- Eating healthy and exercising.
- For women with a high risk of developing breast cancer, they can take estrogen blocking medications which lower the odds of getting it (Mayo Clinic).
- If breast cancer develops, surgery, chemotherapy, radiation therapy, targeted therapy, hormone therapy and immunotherapy are all options to fight breast cancer (WebMD)

**THE EFFECT OF BREAST CANCER ON SOCIETY:**

- In 2020, over 350,000 men and women will be diagnosed with breast cancer (ACS). Over 40,000 of those people will die from it (ACS).
- Breast cancer also costs individuals affected by it billions of dollars each year just to seek and receive treatment.
- Most importantly, breast cancer takes loved ones away from families.

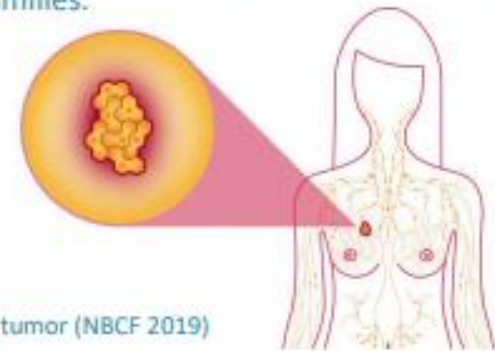


Figure 4. Breast cancer tumor (NBCF 2019)

**THE EFFECT OF SOCIETY ON BREAST CANCER:**

Women who drink 2-3 alcoholic drinks a day are at 20% increased risk for developing breast cancer (ACS). Along with alcoholic consumption, these factors also increase the likelihood of breast cancer developing (ACS):

- Being overweight/obese
- Not being physically active
- Not having children
- Not breastfeeding
- Using birth control (oral contraceptives, the shot, IUD, implants, etc.)
- Receiving hormone therapy after menopause

**SUMMARY:**

While most individuals who are diagnosed with breast cancer will survive, it doesn't make the diagnosis, treatment, and healing process any less difficult and important.

**REFERENCES:**

American Cancer Society . 2020. Breast Cancer.  
 Mayo Clinic. 2019. Breast cancer.  
 WebMD. 2020. Breast Cancer Health Center.



# DEMENTIA

Maggie Uecke, Sarah Barrette, & Isabella Berger

## CAUSAL AGENT:

Dementia is a syndrome, not a specific disease (Ellison). Dementia is an umbrella term that Alzheimer's falls under. Otherwise known as major neurocognitive disorder, can be caused by injuries, infections, or from certain diseases like Alzheimer's (Ellison). Alzheimer's causes brain cells to die off (Ellison). In future sections consider our use of the word 'dementia' as the dementia that happens within Alzheimer's.

## SYMPTOMS:

Symptoms in the early stage include forgetfulness, losing track of time, and becoming lost in familiar places (Dementia). In the middle stage they include becoming forgetful of recent events and people's names, becoming lost at home, having increasing difficulty with communication, needing help with personal care, experiencing behavior changes, including wandering and repeated questioning (Dementia). In the late stage they are becoming unaware of the time and place, having difficulty recognizing relatives and friends, having an increasing need for assisted self-care, having difficulty walking, experiencing behavior changes that may escalate and include aggression (Dementia).

### DEMENTIA: An umbrella term



Figure 1. Dementia as an umbrella term.

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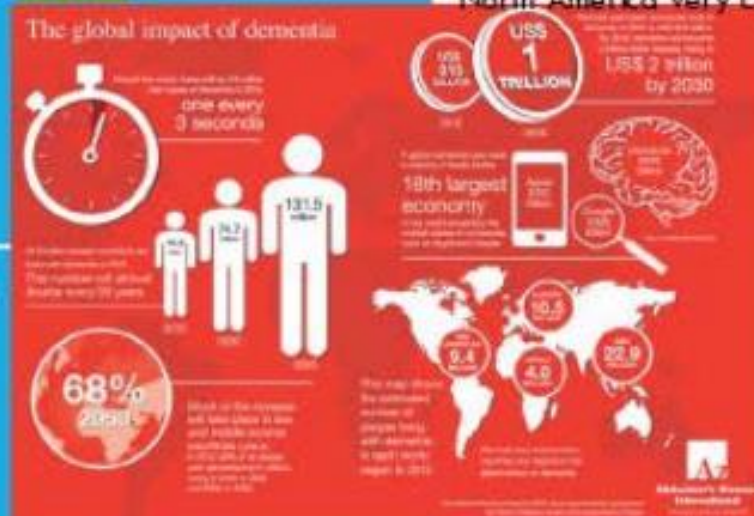


Figure 2. Statistics on the global impact of dementia.

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## REFERENCES:

- Ellison, J. M., & Swank Memory Care Center. (2020, February 24). What Causes Dementia? Dementia. (n.d.).
- Dementia. (2019, April 19). Mayo Foundation for Medical Education and Research. *Mayo Clinic*.
- Alzheimer's Statistics. (n.d.).

**TREATMENT/PREVENTION:** There is no cure for dementia; to help manage symptoms, medication and occupational therapy can be utilized (Dementia, 2019). To reduce the risk of dementia it is recommended for people to get regular exercise, avoid smoking and drinking, and maintain a healthy diet, blood pressure, cholesterol, and blood sugar (Dementia).

## THE EFFECT OF DEMENTIA ON SOCIETY:

All dementias, including Alzheimer's disease, cause progressive brain damage that slowly destroys a person's mental and physical functions (Alzheimer's). Dementia effects 60% to 80% of Alzheimer's patients (Alzheimer's). Dementia is most commonly found in Western Europe with North America very close behind (Alzheimer's).

The cost of assisted living can effect tax-payers and family members because it is so costly.

## THE EFFECT OF SOCIETY ON DEMENTIA:

In many highly developed countries, there is a major population of elderly people who are most likely to develop dementia and need help. Today, there are fewer younger people to help take care of them. Older populations need a lot of people who can care for them. Also, scientists are now studying dementia which has led us to the best ways to help care for people who have dementia.



Figure 3. Confusion that is experienced in one suffering with dementia (Medical News Today)

## SUMMARY:

Dementia is an emotional syndrome that comes in stages, this affects many. It prevents people from living their normal life. It is a challenge for the ones going through it and their families. As the one suffering does not seem like themselves anymore.



Figure 4. A dementia patient with a caregiver



# What is Type 1 Diabetes?

Type one diabetes occurs when your pancreas isn't making any insulin, or very little.

Insulin- A hormone that allows for glucose to enter the cells throughout the body and be converted into energy. (CDC 2019) High levels of glucose in the blood can lead to severe complications, including death. Type 1 Diabetes can also be referred to as juvenile diabetes because it is typically found and diagnosed in children or young adults. (Dansinger, 2019)

# What Causes Type 1 Diabetes?

Type 1 diabetes is thought to be caused by an autoimmune reaction (the body attacks itself by mistake) that destroys beta cells in the pancreas that make insulin. This process can go on for months or years before any symptoms appear. Genetics play a part in developing type 1 diabetes, though many with a genetic predisposition won't go on to develop type 1 diabetes. (CDC Diabetes)

# How is it treated?

Someone who has Type 1 diabetes will have to check their blood glucose level daily. Insulin injections or other medications are often required. There is no cure for diabetes, but lifestyle plays an important role in managing the chronic condition. Physical activity, adequate sleep, and proper nutrition help combat insulin resistance. A medical provider will also help monitor the condition.

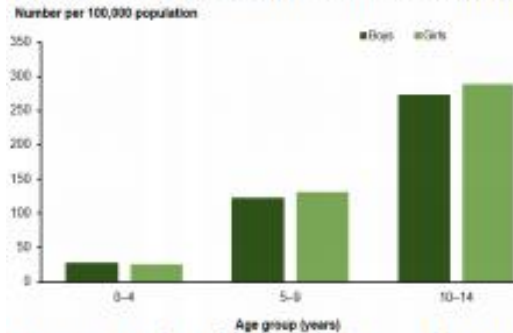
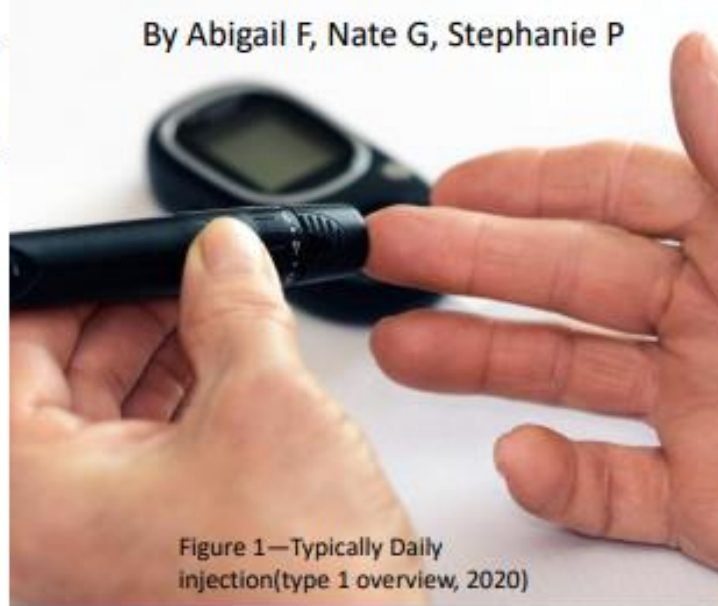


Figure 2 – Number of kids to be diagnosed by age group (Diabetes, 2019)

# TYPE 1 DIABETES



By Abigail F, Nate G, Stephanie P

Figure 1—Typically Daily injection (type 1 overview, 2020)

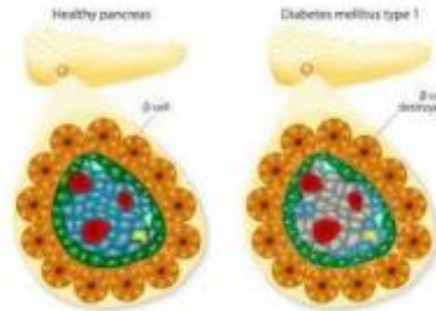


Figure 4— This compares a healthy and diabetic pancreas (Ghose, 2016)

References- Ghose, T. 2016. Long-Sought 'Attack' Signal in Type 1 Diabetes Identified. Diabetes, Type 1 diabetes. 2019. Type 1 Overview.2020.Dansinger, M. 2019. Type 1 Diabetes: Causes, Symptoms, Treatments, Diagnosis, and Prevention. Payne, January. "5 Reasons That May Explain Why Type 1 Diabetes Is on the Rise." U.S. News & World Report, U.S. News & World Report, 26 Apr. 2010, health.usnews.com/health-news/family-health/diabetes/articles/2010/04/26/5-reasons-that-may-explain-why-type-1-diabetes-is-on-the-rise. Symptoms & Causes of Diabetes. 2016.Everything We Need to Know About Type 1 Diabetes. 2019.

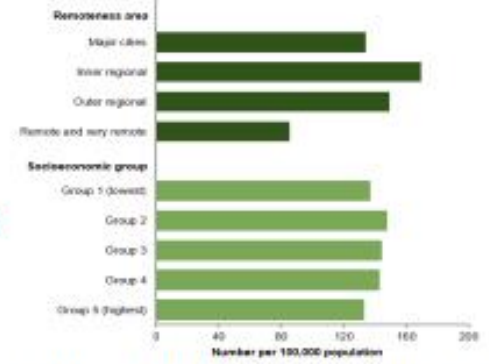


Figure 3— Number of cases based on area of living and social class (Diabetes, 2019)

# How does Diabetes affect society?

Diabetes is a progressive illness that often leads to other complications. In time it can affect major organs, the eyes, nerves, and blood vessels. Treating diabetes and its complications cost the US \$327 billion in 2017. (American Diabetes Society)

# How does society affect diabetes?

As the obesity epidemic continues to spiral out of control more and more cases of diabetes are being diagnosed. Sedative lifestyles and unhealthy diets are combining to increase the prevalence of this disease by 3% every year in just the US alone. (Payne, 2010)

# Summary

Type 1 diabetes is a chronic illness affecting the pancreas and results in insulin resistance. Type 1 diabetes can have serious complications. Today's modern medicine and some lifestyle modifications can help manage the disease. The prevalence of diabetes is increasing in our society, in turn, affecting everyone on some level. Educating people on the risk factors and teaching our children healthy food habits could go a long way in helping to prevent future diagnoses.



**Causal Agent:** HFMD is caused by a variety of viruses belonging to the *Enterovirus* family. *Coxsackievirus A16* is the most common cause in the U.S., but *Coxsackievirus A6* also causes HFMD; the symptoms associated with this type are more severe. *Enterovirus 71 (EV-A71)* has been associated with outbreaks in other parts of the world, especially East and Southeast Asia (Fig. 2); these cases are very rare, but EV-A71 may be related to more severe disease complications like encephalitis. (CDC 2019)

**Symptoms:** fever, sore throat, other flu-like symptoms; mouth sores and skin rash on palms of hands, soles of feet, elbows, knees, buttocks, and/or genitals, which are generally red spots sometimes with fluid-filled blisters (Fig.1); malaise; and less desire to eat and drink. HFMD's incubation period is 3-6 days; symptoms last for 7-10 days. (CDC and Mayo Clinic 2019)

**Transmission:** HFMD is VERY contagious. It is transmitted through person-to-person contact with an infected person's nose and throat secretions (saliva, nasal mucus, throat discharge, etc.), fluid from their blisters/scabs, feces, or respiratory droplets sprayed into the air following their cough or sneeze (CDC and Mayo Clinic 2019)

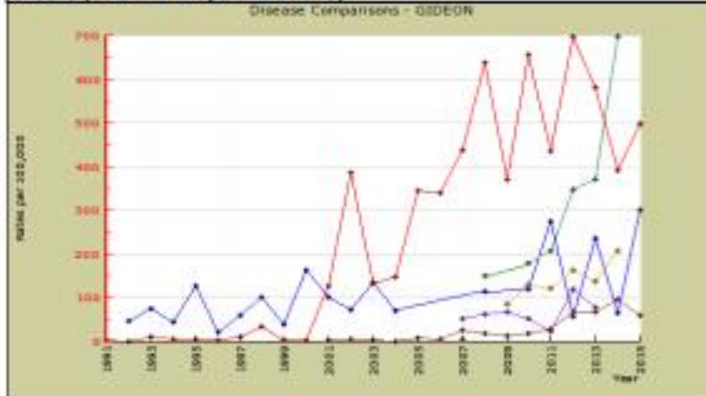


Figure 2. HFMD is very prevalent in the Asian countries of Singapore, Japan, China, Macao, Malaysia, and Thailand (GIDEON)

**Treatment:** no specific medical treatment for HFMD. The virus must be allowed to run its course; most patients get better on their own within 7-10 days. To relieve symptoms: take over-the-counter medications to lower fevers and reduce pain caused by sores; drink plenty of liquids to prevent dehydration; get lots of rest; and consume cold foods/beverages to cool mouth sores. See a healthcare provider if a person or their child experience symptoms lasting 10+ days; symptoms are severe; they are immunocompromised; are not drinking enough to stay hydrated; or are younger than 6 months old (CDC 2019)

**Prevention:** A person can take simple precautions to try to protect their self or their child from HFMD. Experts recommend washing hands often with soap and water or using an alcohol based sanitizer; disinfecting frequently touched/shared surfaces; avoiding touching eyes/nose/mouth; avoiding close contact with other sick persons; and isolating any contagious person who knowingly has the disease. (CDC and Mayo Clinic 2019)

# Hand, Foot, and Mouth Disease



Figure 1. HFMD sores/rashes (Keep Kids Healthy)

**"I Had Hand, Foot, and Mouth"**

In 2016, there was an outbreak of HFMD at Oconto High School, where at least 6 students were infected. Here's what 3 of them had to say.

**V:** "I got HFMD from another football player. It started with an irritated throat. Then, my hands and feet started to get itchy, and that's when the spots started showing. They made my hands and feet super sensitive. It hurt to put pressure on them. I got better about one week after my first symptoms showed."

**B:** "I contracted HFMD when I was lifting in the school weight room. I first noticed symptoms when I started getting really tired and a sore throat in the early afternoon. By the next morning, I started to notice dots around my mouth and some on my hands. I went back to school after missing 5 days, but I'd say it was about a week and a half until I was completely better. I needed lots of rest and took medicine my doctor prescribed."

**K:** "I got HFMD after using the same computer keyboard of someone who had it. My first symptom was red dots on my hand, then things continued to get worse for a week. I was in so much pain and had a bad fever. My doctor prescribed a pill for me to take and I wore gloves and socks so I didn't infect everything I touched."

References: Hand, Foot, and Mouth Disease (HFMD). 2019. Center for Disease Control. Hand-foot-and-mouth disease. 2019. Mayo Clinic.

**Effect of HFMD on Society:** Because HFMD is most common in young children under the age of five and can be spread in a myriad of different ways, the settings that are most susceptible to outbreaks are daycare/childcare centers (Fig. 3 & 4). Infected children can easily transmit the disease by coughing or sneezing into the air instead of their elbow, touching the same toys/objects/surfaces other children touch after them, and to their caretakers who are changing their diapers or helping with their potty training (possibly coming into contact with their urine/feces). HFMD is extremely contagious, meaning that one child could spread it to tens of other kids and caretakers who may likely then bring it home and spread it to their own families, and the cycle could continue to spiral. For these reasons, HFMD has influenced society by placing an even greater emphasis on the need for increased hygiene and sanitation practices in daycare/childcare centers. Employees now disinfect toys and commonly touched surfaces daily and take extra care not to touch a child's urine/feces. Parents also do their part at home by sanitizing objects like pacifiers and teaching their children hand washing and proper sneeze/cough etiquette. All these things help lessen the chance of HFMD spreading in communities. (Mayo Clinic 2019)



Figures 3 & 4. HFMD most often affects infants and daycares (CDC; Child Care Aware)

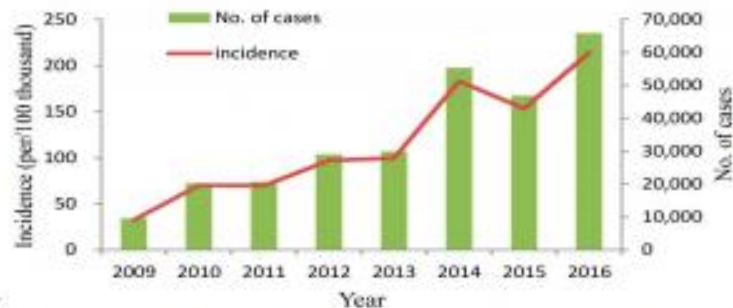


Figure 5. Cases have been increasing in recent years (MDPI)

**Effect of Society on HFMD:** While there is not currently an available vaccine for HFMD, "... researchers are working to develop vaccines to help prevent hand, foot, and mouth disease in the future" (CDC 2019). Cases have been rising in recent years (Fig. 5) but our society is attempting to find a way to eradicate it in order to make it so that no person has to experience the painful symptoms (and rare, but possible) complications that can arise from contracting this illness. Disease pushes scientists, researchers, and medical professionals to make incredible medical discoveries that aid all of mankind

**Summary:** HFMD is a common illness that is most prevalent in young infants and children, but can be contracted by a person of any age. It is highly contagious with painful and irritable symptoms, but is generally not serious and the majority of patients recover on their own with simple at-home treatments. Various prevention measures can be taken to lessen the likelihood of rampant spread.



# Hutchinson Gilford Progeria

By: Darius Jennings, Zach Walters, and Austin Nicklaus



Figure 1: Logo for Progeria Research Foundation

Figure 3: Patient with HGP vs. Normal Patient



## The Effect of Society on Hutchinson-Gilford Progeria:

Since being described in 1886 by Jonathan Hutchinson, Hutchinson-Gilford Progeria remained a mysterious condition. That was until April 16<sup>th</sup>, 2003, when the gene that causes HGP was discovered. This was thanks to not only the National Institutes of Health, but also the Progeria Research Foundation. This foundation, "was founded in 1999 in response to the complete lack of progress being made to help children with Progeria" (Progeria Research Foundation). PRF has helped play a crucial role not only the discovering of the gene but also clinical drug tests. In addition, a number of grants are being funded to further research into HGP. Hopefully, the Progeria Research Foundation and scientists can discover how to cure this rare genetic disorder so these children can live full and prosperous lives. (Progeria Research Foundation)

### Causal Agents:

HGP is caused from a mutation in the LMNA gene. This gene gives instructions to make a protein lamin A, which is crucial in supporting the process for making the nuclear envelope. In HG Progeria this produces the unstable version of lamin A and results in an unstable nuclear envelope and damages the nucleus causing the cells to die prematurely.

### Symptoms

Symptoms of Hutchinson-Gilford Progeria typically start to occur within the first year of a child's life. (Figures 3 and 4) Hutchinson-Gilford Progeria is a disorder that causes children to age rapidly, so in the first years of one's life, you often see symptoms such as slowed growth, a narrow face, hair loss, thinning skin, visible veins, a high pitched voice, and a disproportionately large head. (Mayo Clinic) Health issues such as heart disease, hearing loss, hip dislocation, insulin resistance, and skeleton abnormalities may occur later in life. (Mayo Clinic) The average life expectancy for someone with Hutchinson-Gilford Progeria is 13 years, typically ending with heart diseases or a stroke. (Mayo Clinic)

### Treatment

In a study funded by the Progeria Research Foundation, they found that lonafarnib (Figure 2), a drug originally used to treat cancer, was effective in showing improvement for many symptoms. Lonafarnib helped improve at least one symptom in every child tested, but often helped more. Lonafarnib helped children gain weight, have better hearing, improved their bone structure, and also increased the flexibility of blood vessels. (Progeria Research Foundation) While there is no cure for Progeria, other medications can help slow down symptoms. Therapy can also help with joint stiffness and hip problems. (Mayo Clinic) The Progeria Research Foundation is continuing to do more research in hope to find more treatments for children suffering this brutal disorder. (Progeria Research Foundation)

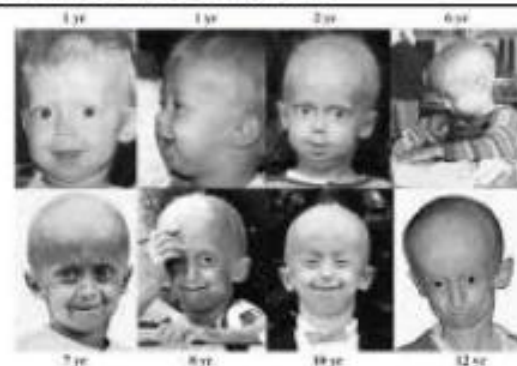


Figure 4: Progression of disease over 12 years

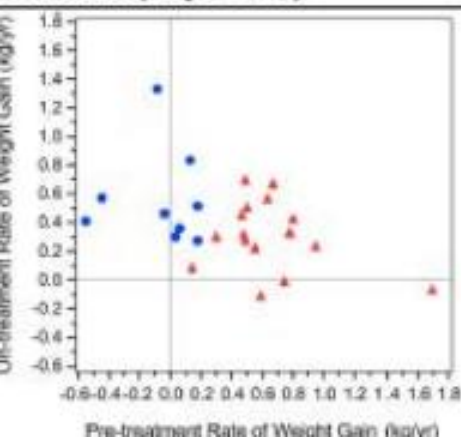


Figure 2: Pre and Post Therapy weight change when on Lonafarnib. (Blue=>50% weight gain, Red=<50% weight gain) (Gordon)

## The Effect of Hutchinson-Gilford Progeria on Society:

Hutchinson-Gilford Progeria impacts every 1 in 18 million children. While this number does not seem large, that is about 350-400 children worldwide at any time. There is no link to location or being a lesser or higher developed country. These children also come from completely different ethnic backgrounds, but all share similar appearances. While Hutchinson-Gilford Progeria does not have any effect on intelligence or brain development, stereotypes arise with the physical ailments Hutchinson-Gilford Progeria has. It is important to remember that these are normal children in old bodies. (Progeria Research Foundation)

### Summary

Overall, Hutchinson-Gilford Progeria is a devastating disease for children. While they suffer from physical deformities, their mind is just as strong as everybody else's. These children are not in any way challenged mentally and are brilliant young children full of young hope, that will find their lives cut way too short by this awful disease. While there is currently no known cure, treatment options do exist. Hopefully one day, with help from organizations such as the Progeria Research Foundation, we can see these bright minds grow into the full-grown adults they were meant to be.



# Kuru

By Kyle Anderson, Brianne Burnett & Bradlee Sievert

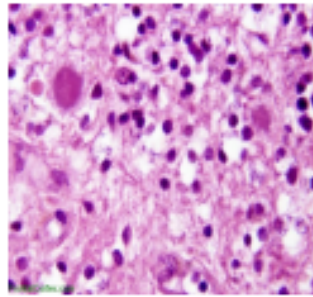


Figure 1 (Causal Agent)

**CAUSAL AGENT:** "Kuru is a very rare disease of the nervous system. It is caused by an infectious protein (prion) found in contaminated brain tissue of a human being" (Vyas 2018) The human brain tissue contains infectious particles that cause Kuru (Vyas 2018). See in Figure 1.

**Symptoms:** "Kuru starts out as a simple headache and some joint pain, which is normal to some people. In the first stage of Kuru, people start to experience loss of body control (Phillips 2016). In the second stage, the person can no longer walk. They also experience weird jerks and body tremors throughout the body (Phillips 2016). In the third stage of Kuru, the person loses their ability to speak. They also start to experience dementia (Phillips 2016). This dementia causes the patient to care less about their personal health, which leads to starvation and malnutrition. Most patients then contract pneumonia, which leads to death"(Phillips 2016).

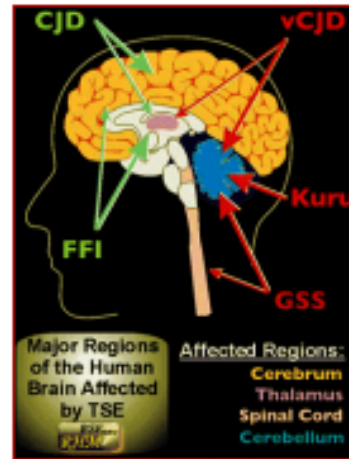


Figure 3 (Effect on brain)

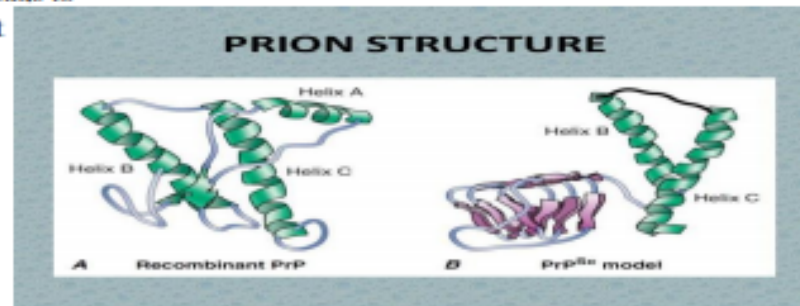


Figure 4 (Prion Structure)

**TREATMENT/PREVENTION:** There is no treatment for Kuru although it can be prevented by discouraging cannibalism. The Fore tribe in Papua New Guinea practiced funeral ritual in which they would consume the tissue of dead relatives, which is what spread the disease to approximately 1% of the Fore's tribe population of 35,000 in 1957 (Ferguson-Smith, 2001). The practice was eventually ended in 1960 and the slowly disappeared after. Cases still appeared afterward, however because of the long incubation period (Vyas, 2018).



Figure 2 (Number of Cases)

**THE EFFECT OF KURU ON SOCIETY:** When Kuru symptoms and death spread throughout Papua New Guinea people thought it was a sort of sorcery. Kuru had highly effect woman and children younger than 8 years old. Leaving almost no young women left in the villages. People in the villages then became scared because they thought that they were going to become extinct (Bichell). The people of Papua New Guinea also could not practice their religion when someone of their family would pass away. Researchers also thought that the disease was genetic but didn't know for sure. So, they conducted experiments to try and find where the disease was coming from. Lidenenbaum the person conducting the research by travelling from village to village, mapped out family trees (Bichell). She figured out that it was not genetics and confirmed that it had to with funerals. She found that the Fore people were eating the deceased, so worms and maggots wouldn't get to it first. Then found out that women and children got it mostly because it was primary women who ate the brain and children ate whatever their mothers gave to them (Bichell).

**THE EFFECT OF SOCIETY ON KURU:** After 1960 the disease had slowly but surely died out, because outside societies that had convinced the tribe to stop performing their ritual (Vyas, 2018). It is because of this that we were able to discover just how long the incubation period is. According to Pierluigi Gambetti, 11 more cases were reported between 1996 and 2004, which suggests that the incubation period can last more than 50 years.

**SUMMARY:** Kuru is a very severe disease that can take up to year to have symptoms. It effects the brain and ends up causing dementia in the patients. It had an effect of everyone who participated in cannibalism

## References

Vyas, 2018. Kuru  
Gambetti, 2018. Kuru.  
Ferguson-Smith et al. 2001. Kuru  
Vyas M. Jain. 2018. Kuru.  
Phillips, Natalie. 2016. Kuru  
Bichell, Rae Ellen. 2016. Kuru



# Lassa Fever

## Lassa mammarenavirus

### RELEVANCE

#### Society's effect on Lassa:

West African culture plays a large part in allowing the spread of the Lassa virus. Many people live in multi-generational home and traditionally take care of their ill relatives. It is also customary, for many, to touch or kiss the diseased at funerals. Both practices greater the risk of contracting the virus. Poverty and a lack of education, within affected populations, contributes to a lack of treatment among the infected.

#### Lassa's effect on society:

Lassa fever can create social exclusion in West Africa. Becoming deaf or having a miscarriage as a result of the disease leads to social embarrassment.



J. K. Richmond, 2003

Image: Ross, A. (2020). Attending to a patient with Lassa fever. Retrieved from: <https://www.cdc.gov/media/releases/2020/s0416-lassa-fever.html>

### DISEASE PATHOLOGY

#### --- VIROLOGY ---

The Lassa virus is a severe zoonotic disease, with no vaccine earning it a biosafety level – 4. The virus replicates cytoplasm of the host cell, which are believed to be macrophages and dendritic. Often, to get a definitive diagnosis, lab testing must be done. ELISA test have proven to be the most accurate test.



Wells, S. W. (2002). Rat testing results.

#### --- TRANSMISSION ---

The *Lassa mammarenavirus* naturally inhibits rodents of the *Mastomy* genus, a breed of rat found in West Africa. "Mastomys rodents shed the virus in urine and droppings and direct contact with these materials, through touching soiled objects, eating contaminated food, or exposure to open cuts or sores, can lead to infection." –CDC, 2014

Once a person has been infected with the Lassa virus, they too become carrier. Person-to-person transmission becomes possible through contact with bodily fluids of the infectious. This is most common in healthcare settings but can also happen in homes when medical care is not sought.

-CDC 2014

#### --- SYMPTOMS ---

According to the World Health Organization, 80% of Lassa fever cases are non-symptomatic. The incubation period is between 2-21 days, starting with the onset of symptoms.

Lassa fever symptoms are varied and similar to other viral hemorrhagic fevers.

##### EARLY STAGES:

- fever
- weakness
- muscle pain
- headache
- sore throat
- nausea
- chest pain
- cough

##### SEVER STAGES:

- facial swelling
- fluid in the lungs
- low blood pressure
- bleeding from body orifice
- seizures

Because the most severe cases, often, are admitted to hospitals, the observed case-fatality is about 15%

-WHO, 2017 & Hass, 2004

#### --- OVERVIEW ---

Lassa fever is a viral, endemic in Western Africa that causes a severe hemorrhagic fever. The virus is contracted through rats and contaminated objects. It is a difficult diagnose without lab-testing and there is no vaccine yet. Due to the severity of the disease it has been concern for bio warfare. Data on the virus is wide and faulty for many people in West Africa go untreated and undiagnosed.



- - Lassa endemic areas
- - Areas with evidence of Lassa virus infections

### TREATMENT & PREVENTION

#### PREVENTION

Unfortunately, there is no protective vaccine against Lassa virus. Though, ongoing research is being done to develop one.

Preventative action is the next best step. This is done by educating the population of Western Africa on how to avoid transmission of the virus.

##### RODENT TO HUMAN

- Keep food in rodent proof containers
- Keep home clean
- Set rodent traps
- Refrain from consuming rodents

##### HUMAN TO HUMAN

- Avoid contact with human secretions (saliva, blood, urine, etc.)
- Wear protective clothing
- Wash / sterilize contaminated objects
- Isolate the ill and infected

(CDC, 2020)

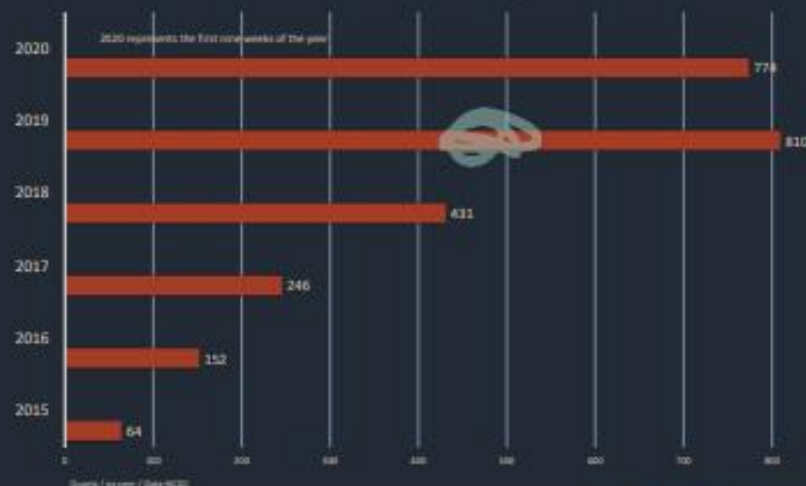
#### TREATMENT

The most successful treatment of Lassa fever has been the antiviral drug, Ribavirin. When administered within the first 6 days of the infection, it seems to improve survival rates. (VHFC, 2020)

Symptomatic treatment is important in combating Lassa fever. Keeping the patient well hydrated and oxygenated, maintaining proper electrolyte balance and blood pressure as well as treating any other complications that come with the infection. (CDC, 2014)

This graph represents the rise in Lassa fever cases in Nigeria. Many are concerned about this year, 2020. What does the rise in cases mean?

Lassa fever cases in Nigeria



Source: <https://www.cdc.gov/media/releases/2020/s0416-lassa-fever.html>



**CAUSAL AGENT:** LF is a disease that is caused by parasitic worms that enter the lymphatic system of a human through the bite of an infected mosquito (CDC, 2019). The worms, *Wuchereria bancrofti*, *Brugia malayi* and *Brugia timori*, breed in the lymph vessels of the human. Then immature larvae, or microfilariae, enter the person's bloodstream causing the next mosquito that sucks the person's blood to become infected, starting the cycle over again (WHO, 2020)



Figure 1. a) Microfilaria of *W. bancrofti*; b) Female *Aedes aegypti* mosquito; c) Microfilaria of *Brugia malayi* (CDC, 2018).

**SYMPTOMS:** Most people who get LF are asymptomatic. However, "these asymptomatic infections still cause damage to the lymphatic system and the kidneys, and alter the body's immune system" (WHO, 2020). A small percentage of people with LF will develop symptoms visible to the human eye. The symptomatic people develop lymphedema of the limbs, the scrotum for males, and the breasts for women. The lymphedema is caused by fluid collection due to a wrongly functioning lymphatic system (CDC 2019). These symptoms are devastating and can be permanently debilitating to those who get this disease.



Figure 2. Patient with Lymphedema (CDC, 2018).

**THE EFFECT OF SOCIETY ON LF:** For many complex reasons within society, LF is still persistently transmitted. In an assessment study for a Northern Ghana population, there were "...high levels of refusal to ingest the drug, high levels of reported adverse drug reactions, low [Mass Drug Administration, or MDA,] coverage at community level, poor adherence to the MDA protocol and non-participants' responsiveness" (Manyeh, 2019). On the other hand, when a society works together, they can defeat LF. Afterall, it has been eliminated in 10 countries so far (WHO 2020).

# Lymphatic Filariasis

By Abbie Lindbom & Phillip Graves

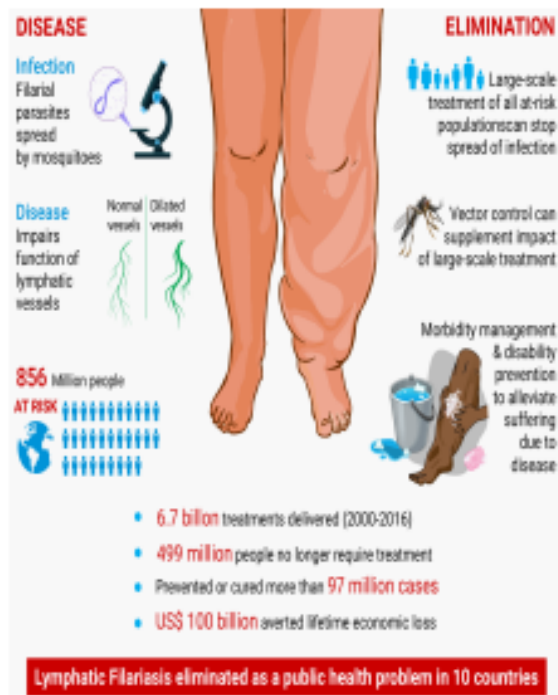


Figure 3. The facts on Lymphatic Filariasis (WHO, 2020).

"Lymphatic Filariasis is a leading cause of permanent disability worldwide" -CDC, 2018.

**THE EFFECT OF LF ON SOCIETY:** Lymphatic Filariasis can be found across 72 countries (CDC, 2018). The Disease reigns in tropical and sub-tropical areas of low-income Asian, African, Western Pacific, Caribbean Island and South American countries (CDC, 2018). Over 120 million people are affected by LF (CDC, 2018). The CDC claims that the disease is a major cause of permanent disability across the globe (CDC, 2018). Due to their disability, many people are unable to work, which leaves a negative impact on their local communities (CDC, 2018).

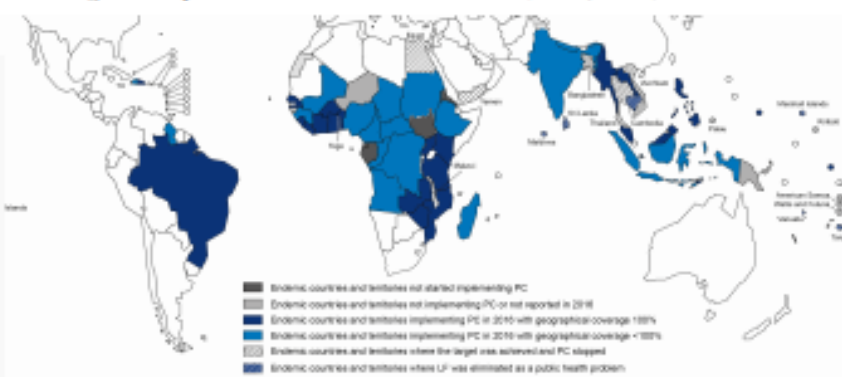


Figure 4. Distribution of LF and status of preventive chemotherapy (PC) in endemic countries (WHO, 2016).

**TREATMENT/PREVENTION:** Knowing that LF spreads through mosquito bites, people in LF prevalent areas can take preventative measures to avoid being bitten by mosquitos by sleeping in an air-conditioned room or in a mosquito net at night and spraying bug repellent on exposed skin and wearing long sleeve shirts and trousers at dawn (CDC, 2018). Annual mass treatments can also be done to kill the microscopic worms, reducing the amount of microfilaria in the blood (CDC, 2018). Experts say that the disease can be globally eliminated; China and some other countries have seen success on a local scale, proving this to be possible (CDC,2018).

**SUMMARY:** Lymphatic Filariasis is a disease found in tropical/ sub-tropical countries that causes abnormal swelling of limbs. It is transferred by many mosquito bites over time and can be prevented with the use of bug repellent and mosquito nets. The CDC says that the disease can be eliminated through mass community treatments, and the world is working to make this disease part of the past. (CDC, 2018)

References

- Center for Disease Control (CDC). 2018/2019. Lymphatic Filariasis.
- Manyeh, A. K., Ibiyemi, L., Baiden, F., Chirwa, T., Ramaswamy, R. (2019). Using Intervention Mapping to Design and Implement Quality Improvement Strategies Towards Elimination of Lymphatic Filariasis in Northern Ghana. PLoS Neglected Tropical Diseases. Vol. 13 (Issue 3), p1-18. 18p.10.1371
- World Health Organization. (2020). Lymphatic Filariasis. World Health Organization.



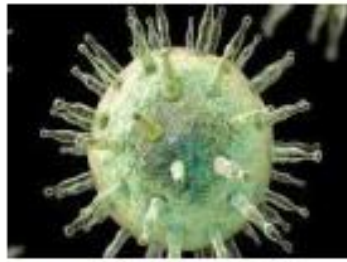


Figure 1. The Epstein-Barr virus (UCSF 2020)

**CAUSAL AGENT:** Infectious Mononucleosis (mono) is an infectious disease spread through bodily fluids. It is also known as the kissing disease due to its high transmissibility through saliva, but any transfer of bodily fluids can transmit the disease. (CDC 2018). Mono is most often caused by the Epstein-Barr Virus (Fig. 1) (CDC 2019).

**SYMPTOMS-** Mono symptoms become apparent up to 6 weeks after exposure, and include a high fever, swollen lymph glands in the neck and armpits, swollen tonsils (Fig. 2) sore throat, headache, fatigue, and a rash on or in your mouth (Fig 3) (Cafasso et al. 2019). In most cases the symptoms are mild, and the infection clears on its own in 1-2 months (Cafasso et al. 2019). Sometimes, however, mono causes splenomegaly which is why those with mono are advised to limit activity as to not accidentally rupture an enlarged spleen. It's rare but can happen and can very easy become fatal (Mayo Clinic 2018). Mono also puts people at an increased risk for Hodgkinson Lymphoma for years and years after symptoms subside (Fig. 4) and can experience things like chronic fatigue or migraines as a result of

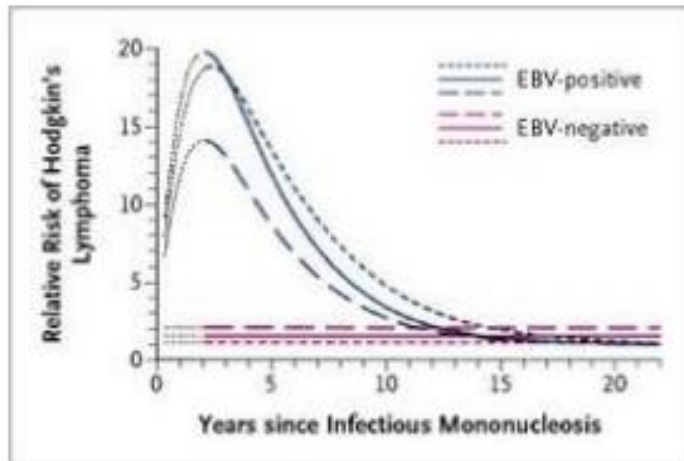


Fig. 4 Risk of Hodgkin's Lymphoma over the years after contracting mono (NEJM 2003)

# Mononucleosis

By Chloe Mongin

**"I'd always been energetic and never had any serious problems, then I got really sick with a high fever. They told me I had mononucleosis... I never seemed to recover" – Alana Stewart**



Fig. 2 swollen tonsils from mono (On Health 2016)

**TREATMENT/PREVENTION:** There is currently no vaccine to protect against mono; however, it is suggested to avoid kissing, sharing food, drinks, or personal items, with people who are infected with mono or were exposed to someone who has mono (CDC 2019). If you do become infected you need to stay hydrated, get rest, and take over-the-counter pain and fever medications. **DO NOT** take antibiotics (Mayo Clinic 2018). Other treatments may be organ specific depending on if complications arise during the infection. Also, limit contact sports until full recovery due to the risk of splenic rupture.

**THE EFFECT OF MONO ON SOCIETY:** Mono being known as the "kissing disease" means that it has always had a stigma around it. When I was in 6<sup>th</sup> grade, I remember my best friend getting mono and all the boys made fun of her because "she must have kissed someone gross". While this may just be "boys being boys" to some people it really affected her emotional health for months (it didn't help that the disease takes so long to clear up). When mono is going around people's social interactions change. People are more conscious about sharing food and drinks and take precautions about casual flings. Even partners may avoid each other to not get sick. People being affected by the disease for years after is another reason this disease affects society. People feeling chronically tired or having constant migraines can lead to unproductivity.

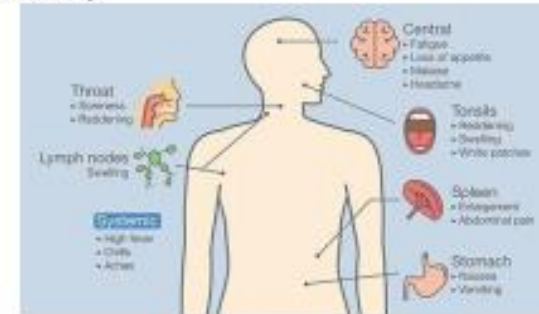


Fig. 3 Mono common symptoms (Katherine Lee 2018)

**THE EFFECT OF SOCIETY ON MONO:** Our current society has a lot of socially acceptable characteristics which make the spread of mono very easy, and, of course, the more we allow it to spread the more the disease is aloud to thrive. People doing things such as sharing drink or food can very easily facilitate the transmission of mononucleosis and is a main reason why it can spread so quickly.

**SUMMARY** Mono is a contagious viral illness with no preventative vaccine. This disease often affect people later into their life's after the infection is gone and, while it is rare, the disease can become fatal. The disease itself may not be damaging, but the stigma around "the kissing disease" and people's reactions to it can be.

## References

- Cafasso, J. C., & Goldman, L. (Headline). 2019. Everything You Need to Know About Mono
- Center for Disease Control (CDC). 2019. Mononucleosis.
- Mayo Clinic. 2018. Mononucleosis.





Figure 1: Rabid fox (WHSV, 2019)

**Transmission:** It is transmitted through the saliva of an infected animal and can infect you through broken skin or through your eyes, nose, or mouth. Rabies is usually transmitted through wild animals, like, skunks, racoons, bats, and other small animals. Even dogs could potentially have it. (CDC, 2019)

**SYMPTOMS-** Rabies is often difficult to diagnose, considering that the disease can take anywhere from 20-60 days (on average) with rare reports of 5-6 up to 7 years passing before anything begins to show (Haider). However, when symptoms to reveal themselves in humans, they often include agitation, seizures, insomnia, excess salivation, fever, confusion, abnormal posture, tingling, burning, speech difficulty, and weakness. In animals, the symptoms generally include a change in voice (bark or otherwise), excessive salivation, uncoordinated muscles, and general unabashed behavior toward humans (see figure 2).

**TREATMENT/PREVENTION:** You could get a vaccine against rabies. If you get bitten by any animal, make sure you wash the bite, or scratch out very good and then to go to the doctor as soon as possible. Doctors could potentially give you postexposure prophylaxis, this has the rabies vaccine and a dose of human rabies immune globulin, in order to prevent this disease, make sure to keep an eye on your animals, get them their shots, spay or neuter them, call animal control to handle any unfamiliar animals. For people, they should not come in contact with wild animals or unfamiliar animals, wash animals bites or scratches, vaccinate your pets, and talk to a doctor if you are bitten.(CDC, 2019)

# Rabies

By Abigail Marquardt and Emily Burns



Figure 2: Different human symptoms and signs from animals (lifestylemb.com.ph)



Figure 3: Different treatments for rabies and their effectiveness over time (rabieswatch.com).

‘...[Rabies] is capable of infecting all mammals.’

- Haider, “Rabies, old disease and challenges.”

**THE EFFECT OF RABIES ON SOCIETY:** It has caused people to vaccinate their pets. It has caused people to fear wild animals. People have inside animals, to protect them from animals that might have rabies.



Figure 4: Cases of Rabies in Wisconsin (Wisconsin Department of Health, 2018)

**THE EFFECT OF SOCIETY ON RABIES:** Society has developed vaccinations for rabies, which has helped the disease dwindle to nearly nothing. Vaccinations can be given to animals or humans, but are generally cheaper for the animal than the human (See Greenwood). While the vaccination cannot eradicate rabies due to the ease it is spread through wild animals it can certainly decrease the number of victims affected and reduce the amount of potential exposure.

**SUMMARY** Rabies is deadly, and only potentially has a treatment. If bitten by any animal, whether it shows signs of rabies or not, an individual should be examined and given a vaccination. However, because of the uncertainty of the effectiveness of the vaccine after one has been bitten, preventative measures are the best course of action, given that symptoms may take a long time to appear.

## References

Center for Disease Control (CDC). 2019. Rabies.  
 Greenwood, B. (2014, February 19). The contribution of vaccination to global health: past, present and future. In *Philos Trans R Soc Lond B Biol Sci*. Retrieved from 10.1098/rstb.2013.043  
 Haider, S. (2008, February 26). Rabies: old disease, new challenges. In *CMAJ-JAMC*. Retrieved from 10.1503/cmaj.071709





**Causal agent:** sars is actually a form of coronavirus. Coronavirus is any family as a single stranded RNA virus that have a lipid envelope studded with club shape projections. Sars is one of a type of coronavirus. Sars stands for severe acute respiratory syndrome and it attacks ones respiratory tract, causing lots of pain to ones chest and gives flu like symptoms.

Figure 1. Sars Virus (CDC 2017)  
F.A Murphy  
S. Whitfield

**Symptoms:** Sars is an airborne disease. Which means that it spreads through the droplets of another individual. You can also get it by touching an area that was infected and not washing your hands and then touching your face. Common symptoms for this are a dry cough, fever, headache, muscle aches, as well as difficulty breathing.

**Treatments/ Prevention:** Sadly, we do not have any treatments for sars. However, we offer supportive care such as tracheal intubation, airway managements, mechanical ventilation, and oxygen therapy. Prevention includes Washing hands, cleaning surfaces, and not touching your face.



Figure 2. Sars Symptoms (2019)

# Severe Acute Respiratory Syndrome

By Avery Katzbeck

## The effect society has on

**sars:** The people didn't have much information on the disease so a lot of rumors were being spread through social media, causing lots of mass panic to the public.

## The effect SARS has on

**society:** This virus has caused a lot of knowledge in the field of medicine and allowed us to figure out how to deal with an issue such as this virus.



Figure 3. Sars cases in the US (2003) Anat Givon

## References:

- (Definition of CORONAVIRUS, 2020)
- (SARS: Symptoms, Prevention, & Treatment,





CASUAL AGENT: A microscopic mite burrows into your skin (fig. 1 Mayo Clinic, Mayo Clinic Staff, 2018), making a tunnel, and lays eggs. When

# SCABIES

EMMA LAATSCH

TREATMENT/PREVENTION: When infected, treat all in your household and anyone you have sexual intercourse with. Clean clothes and towels and such must be put in hot water than dried. You then should put washed materials in a plastic bag for at least three days, the bugs can't survive that long without human skin. Scabicides can only be prescribed by your doctor and can't be found over the counter. Apply lotion from head to toe, wait till given time than wash. Only permethrin or sulfur ointment may be used on infants. Everyone with contact should be treated at same time to prevent infestation. Skin sores should be treated by antibiotics. You may still itch after 2 weeks after taking antibiotics. (CDC 2010)

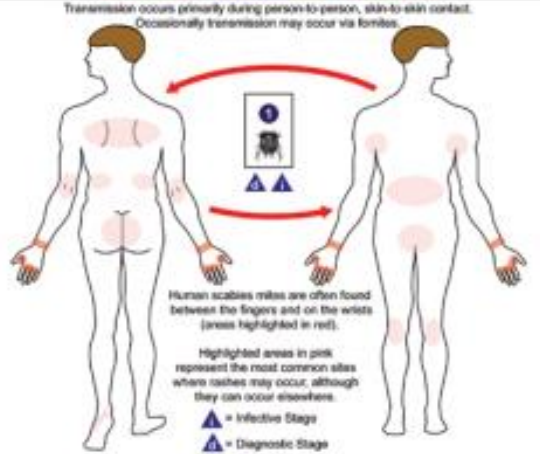
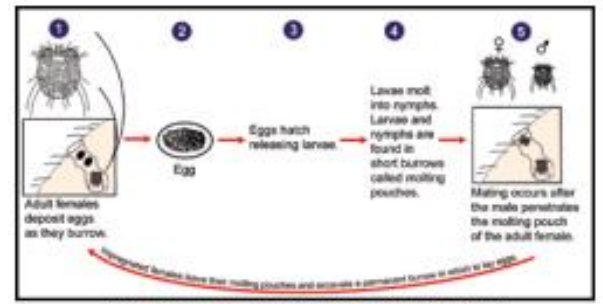


Fig. 3 Scabies procedure (CDC 2010)

SCABIES EFFECTS SOCIETY: Experts say it's been around for 2500 years. In Europe they call it the itch or gale. They named it scabies because when itching it leads to scabs. (antimicrobe, Wisniewski) Experts believe that there's a possibility when talking about Leprosy in the bible they misdiagnosed because the symptoms seem to fit with Scabies more accurately. (NCBI Sinai, 2007) SOCIETY EFFECTS SCABIES: In poorer countries, outbreaks have occurred because of overpopulation. According to (NCBI Trop, 2017) if we promote ideas, develop an action plan for priority areas of advocacy, epidemiology, control strategies, and biologic research this can help prevent it in these areas.

Fig. 1 Mites burrowing into skin (Mayo the eggs hatch, they t Clinic, Mayo Clinic Staff, 2018) ravel to the surface of your skin. There you have a reaction to their eggs and their waste. This is what causes rashes and itchiness to the skin. Close personal contact, sharing of clothes and bedding helps the travel of the bugs. (Mayo Clinic, Mayo Clinic Staff, 2018)

SYMPTOMS: Symptoms can take 4-8 weeks to show. (CDC 2010) Itchiness and rashes on: wrist, elbow, armpit, penis, nipple, waist, buttocks, and shoulder blades. (Fig. 2 Dr. Nemetz, Oakley, 2015) Infants react on: neck, palm, face, and soles. Another symptom is sometimes the mites burrows are visible. (CDC 2010)



Fig. 2 Left is mite burrows (Dr. Nemetz, Oakley, 2015) right is scabs from itching

SUMMARY: Scabies is an infestation from a mite that burrows into your skin and lays eggs, you than react to that with rashes all over your body. The bugs can be spread through cloth material and close contact. There are treatments and ointments you can take to kill the bugs and by keeping yourself and your close one's aware helps prevent. Scabies effects society and vice versa through education and hygiene.



**CAUSAL AGENT** Scurvy comes from a lack of vitamin C in one's diet (Maxfield 2019). However, it takes about 4 to 12 weeks of not having anything sources of vitamin C before the body will actually start to develop symptoms of scurvy. (Maxfield 2019).



Figure 3 Large bruises on the inner thigh



Figure 4 Yellowing teeth and gum line bleeding

**SYMPTOMS** After the first 4 to 12 weeks, scurvy can begin to present in things like irritability and anorexia. After that, symptoms like thin skin, loss of teeth (Figure 4), blood coming from the nose, and bruises and rashes on the legs (Figure 3) can start to occur as well. (Maxfield 2019).

**TREATMENT & PREVENTION** Treatment for scurvy is fairly simple: vitamin C supplementation. It's recommended to take 2 to 3 grams of vitamin C, and then 500 mg per day the following week. (Leger 2008). Talking about prevention is a bit difficult. A lot of the things that cause scurvy are things that can't always be controlled. One of the biggest risks is poor or inadequate nutrition due to lack of food (Leger 2008). Other people with the biggest risks include poor diets, alcohol dependency, eating disorders, and other physical illnesses that have food intake related side effects (Leger 2008). The best way to prevent scurvy is the regular intake of fruits and vegetables (Maxfield 2019).



Figure 1 James Lind feeding a lemon to a sailor sick with scurvy (Price 2017)

**THE EFFECT OF SCURVY ON SOCIETY** "According to historian Stephan Bown scurvy was responsible for more deaths at sea than storms, shipwrecks, combat, and other diseases combined." (Price 2017) This is, of course, because most of the food taken on voyages contained little to no Vitamin C. Since it is found in fresh fruits and veggies (as well as an assortment of other foods), sailors brought little with them because of how easily and quickly they would spoil, and so no Vitamin C and a growing rate of scurvy. Today, we make the association of Vitamin C with citrus fruit and that is due to the British navy supplying its sailors with limes. Confusion ensued, however, when the limes lost vitamin C due to it being destroyed by heat. People had then did not realize this, but it led James Lind to conduct a few experiments (Figure 1). The problem was, he had no concrete conclusion due to unknown complications in his experiments. Even with his confusion, a little progress was made, which led to changes in history.

# SCURVY

BY EMILY DEFORGE & SARA REBBIE

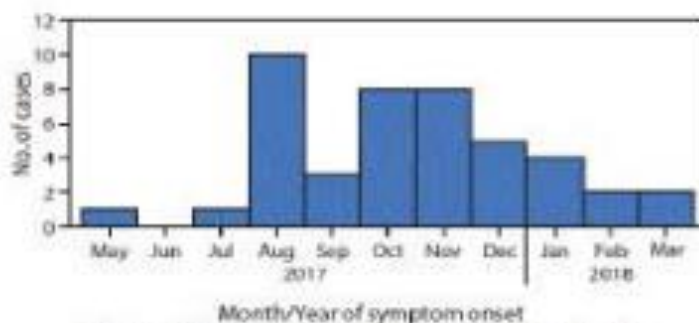


Figure 2 Suspected scurvy cases among South Sudanese refugees (Ververs et al., 2019)

**SUMMARY** Scurvy is a disease caused by a deficiency in vitamin C and was very prevalent on sea voyages. It was responsible for countless deaths on such voyages, but after the discovery of vitamins and their importance, cases have significantly decreased around the world. Scurvy is now only found in places of great poverty and lack of nutritious food.

**THE EFFECT OF SOCIETY ON SCURVY** Over the centuries, many kept finding 'cures' to scurvy, but they kept forgetting them! In 1535 Jacques Cartier found that his men were saved by a tea that was made from the bark and leaves of a particular tree. During the 1500s and 1600s they made the connection between fruits and vegetables and scurvy. Johannes Bachstrom thought of the term antiscorbutic ("without scurvy") to describe fresh vegetables in 1734. (Price 2017)

Those that are in poverty are at risk of developing this disease due to limited access to nutritious food. "Doctors at the Baystate Medical Center in Springfield, Massachusetts, recently reported that between 2010 and 2015 they had found at least 30 cases in one of Springfield's poorest neighborhoods." (Price 2017) Scurvy is still found in places of poverty and malnutrition, like Springfield. For instance, an outbreak of scurvy occurred in Kakuma Refugee Camp, Kenya (Figure 2)(Ververs et al., 2019). Scurvy isn't something new among these refugees due to their limited amount of fresh food as well as affordability (Ververs et al., 2019). "As is true with all vitamin-deficiency diseases, scurvy can never be eradicated; adequate nutrition is its only prevention and only cure." (Price 2019)

## REFERENCES

- Léger D. (2008). Scurvy: reemergence of nutritional deficiencies.
- Maxfield, C. (2019). Vitamin C Deficiency (Scurvy).
- Price, C. (2017). The Age of Scurvy.
- Ververs, M., et al. (2019). Scurvy Outbreak Among South Sudanese Adolescents and Young Men - Kakuma Refugee Camp, Kenya, 2017-20



### Treatment/Prevention:

Many people infected with the swine flu do not need to go to the hospital. Self-care is important for recovery such as rest and lots of fluids. Some may need symptom relief and doctors will prescribe antiviral drugs to those at high risk or those who experience complications. These antiviral drugs are Tamiflu, Relenza, Rapivab, and Xofluza (CDC 2019). The most common strains that pop up seasonal H1N1v and H3N2v are included in the yearly flu vaccine and can be prevented (CDC 2019). It is also important to practice good hygiene after handling pigs (Fig 2.)

Figure 2 (CDC) Diagram showing how the H1N1 virus spreads to humans.



Figure 3 (Health Essentials from Cleveland Clinic) shows a common symptom of H1N1; Fever



### Symptoms:

Swine Flu symptoms are like symptoms of any flu strain (Mayo Clinic (2019)). Common symptoms are fever (Fig. 3), chills, cough, sore throat, runny/stuffy nose, body aches, headache, fatigue, diarrhea, and vomiting. These symptoms occur 1 to 3 days after exposure to the virus. Severe cases could result in pneumonia, respiratory failure, and other severe illnesses including death. (Mayo Clinic 2019)

# Swine Flu

By Alexis Kaempf, Sarah Freerking, and Slate Koehler

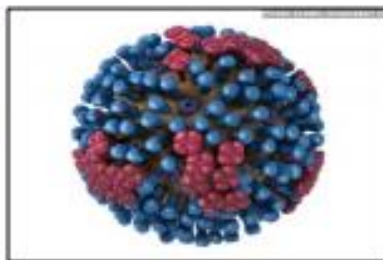


Figure 1 (CDC) Swine Flu Virus: H1N1

**Causal Agent:** "Swine Influenza is a respiratory disease of pigs caused by type A influenza virus" (CDC 2019). When the virus from the swine is found in a person it's called a "variant influenza virus" in this case the swine flu in humans is called H1N1 (CDC 2019) (Fig. 1).

### Summary:

Swine Flu is most common in pigs and in very rare cases it can have an antigenic shift and spread to humans. The most notably strain is H1N1 and this strain caused the 1918 Spanish Flu Pandemic and the 2009 Swine Flu pandemic as well (CDC). Its symptoms are like other flu strains and it can be deadly. The annual flu vaccine is made with properties that will help prevent H1N1 and other flu strains.

References: Remmerswaal, Doherty, and Peter Marks. "Children's Fear Reaction to the 2009 Swine Flu Pandemic: The Role of Threat Information as Provided by Parents." *Journal of Anxiety Disorders*, Pergamon, 28 Nov. 2010. Doherty, Ben, et al. "Class Promotes Tougher Conditions to Stop Spread of Disease -- as it Happened." *The Guardian*, Guardian News and Media, 26 Jan. 2010. "H1N1 Flu." (CDC) Centers for Disease Control and Prevention.

### The Effect of Society on Swine Flu:

**Vaccine:** "A vaccine was developed in 2009 to help stop the spread of swine flu" (NVIC).

**Hygiene practices:** "There was an emphasis on hygiene to stop the spread of the swine flu" (NVIC). Hand sanitizer sales rose the year of the outbreak and hand washing was strongly encouraged. This all helped slow the spread of H1N1. (NVIC).

**Immune:** world epidemics and global stock market performance

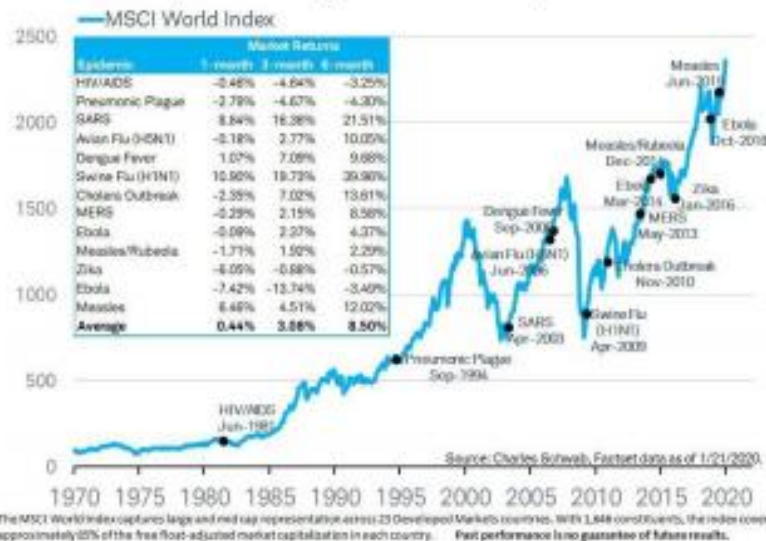


Figure 4 (Doherty, The Guardian) Graph shows the economy during an outbreak

### The Effect of Swine Flu on Society:

#### Economic effects:

The swine flu had a large impact on the economy. People spent less and the stock market fell (McKibbin). Travel and tourism industries were impacted the most. (Fig. 4)

#### Emotional:

Many people experienced medical anxiety and fear due to the swine flu. Children and adults were both affected. (Remmerswaal,2010)

"My Pets about Human Infections with Variant Viruses." (CDC) Centers for Disease Control and Prevention, 8 Jan. 2010. "Swine Flu (H1N1 Flu)." Mayo Clinic, Mayo Foundation for Medical Education and Research, 30 Jan. 2019. "What's Happening in My Body When I Have a Fever?" Health Statistics from Cleveland Clinic, 30 May 2019. "What is the History of Influenza Vaccine Use in America?" NVIC "National Vaccine Information Center (NVIC)." NVIC, 2019.



# COMM SCI 146

## GPS Spring Seminar

<b><i>Activity Instructions</i></b> , Hurning, DeForge, Fendryk, Tran, & Rebbie.....	35
<b><i>Chinese Culture</i></b> , Kaempf, Block, Butler, Desotell, & Valind.....	37
<b><i>Latin Cookbook</i></b> , Bocek, Randle, Janas, & Pugh.....	38
<b><i>Maracas</i></b> , Anderson, Berger, Bjorkman, & Klatt.....	41
<b><i>All About Mexico</i></b> , Allen, Allen, Moberg, Smith, & Young.....	42
<b><i>Our Central American Cookbook</i></b> , Sulk, LaPrise, & Sievert.....	43
<b><i>Mexican Culture of Sombreros</i></b> , Enderby, Ihander, & Fochesato.....	52



# Activity Instructions

## Piñata

Materials: cereal box, scissors, tape, glue, crepe paper (can substitute any strips of colored paper)

### Step-by-Step:

1. Sketch an outline of a donkey on an empty cereal box and cut it out! Trace your donkey to create another identical cutout and cut that out too.
2. Cut out a long strip of the cereal box (about 1.5 inches thick) and glue in between the two cutouts to connect them.
3. Cut one side of the strips of paper (crepe paper if available) to make a fringe and glue the fringe to the donkey starting at the bottom working your way up.
4. Once it's dry you can carefully cut a small trap door at the bottom and you're done!



Source: <http://ohhappyday.com/2011/10/mini-piñatas-diy/>



What is the Piñata? Where is it from? What was its original purpose in the Spanish culture? By knowing all of these things, you'll be able to find better meaning and experience more joy when partaking in this activity. According to Cincy-Cinco, a website that is dedicated to sharing genuine and authentic information on the Latino culture, the piñata tradition is believed to have started over 700 years ago and to have originated and popularized by the Europeans in the 14th century.

This tradition was made popular and adapted to the European culture through the celebration of lent and soon afterwards the first Sunday was known as 'Piñata Sunday'. The Piñata custom would then afterwards go on to spread in Spain as a result of Spanish missionaries and North Americans using the Piñatas as a way to celebrate the conversion of a person. (Fun Fact: Piñatas originally symbolized the 7 deadly sins and the stick that was used to break the Piñata was a representation of the love/forgiveness that the Christian God had for humans).

Overall, the Piñata is a fun activity with cultural roots that date back over 700 years ago.



## Clay Pottery

### Terra Cotta Pot



### Instructions:

- Roll the clay into a ball
- Pinch/push down the center of the ball to make a "pot"
- Any additional decorating!
- Let sit and air dry

### Source:

<https://www.childfun.com/themes/world/mexico/>

Clay Pottery was and continues to be an art form that when created properly is highly cherished by collectors and valued by those who see the beauty in their designs.

(See Examples Below)



Pottery was part of the culture that Mexican ancestors such as the Aztecs and Spaniards practiced. Other nationalities that contributed to advance the craft of pottery were the Chinese, Egyptians, & Mesopotamians. Spain was introduced to hand made pottery known as the Majolica in the 13th century when they were invaded during the Moorish Invasion. Besides using the Majolica potteries as bowls to hold food, Majolicas often had designs that showed gods or tribes within the culture. The people who made these pieces of art such as the Spanish monks and artisans would share their techniques with one another and as a result improve the quality of their work and furthermore, add on to the rich multi-cultures of producing pottery.

(Source) Imports, La Fuente. *A Brief History of Mexican Talavera*, [www.lafuente.com/Blog/A-Brief-History-of-Mexican-Talavera/](http://www.lafuente.com/Blog/A-Brief-History-of-Mexican-Talavera/).

# Activity Instructions



## Sombreros

- Materials Needed : Paper Plates, String, Paper Bowl or Cup, Glue, Stickers, Decorations for Sombreros

### HOW TO MAKE IT!

1. Start by gluing the bowl (or cup) to the center of the paper plate.

2. Punch 2 holes on the outsides of the plate, tie a large piece of string through the holes. This should create the strap to keep it on your head.

3. Decorate the Sombreros to your liking.



Source: <https://www.hellovonderful.ca/post/10-festive-cinco-de-maya-crafts-for-kids/>



The Sombrero is an iconic wide brimmed hat that is most commonly used to symbolize the rich history of the Spanish culture. The Sombrero is a hat that has its origins in the 13th to 15th century. It was most commonly worn by the Spanish, Mexicans, and people in the Southwestern part of the U.S.

(Fun Fact: Sombra is a Spanish word that translates to "shade" in English. As you could guess the sombrero's main function was to provide effective protection and relief to wearers from the sun's bright rays)

The sombrero's quality like any other clothing of the past was dependent on the status of the person who wore it. Peasants were said to have worn sombreros that were made out of straw and people of higher social status wore sombreros that were made out of a higher quality cloth like felt.

Today, sombreros are commonly worn during Spanish celebrations and is an artifact that is well recognized as an essential symbol to Mexican Culture

## Maracas!

Materials: Rice, Plastic Spoons, Colorful Tape, Plastic Easter Eggs

1. Pour rice into plastic egg and close it
2. Tape around the seam of the egg
3. Place the plastic egg between the head of two plastic spoons and then tape around the head of the spoons to hold them together
4. Tape the handles of the spoons together
5. Shake!



Source: <https://www.mottchildren.org/posts/camp-little-victors/homemade-maracas>

The Maracas is an instrument that belongs to the percussion family. Instruments that belong to the percussion family are played by either striking the piece with another similar instrument or rubbing/shaking the instrument by hand. These instruments require a person to grasp the rhythm of the song and have great timing. Both Latino and Puerto Rican music uses the maraca in genres like salsa.



Maracas are believed to have originated in Puerto Rico where the locals would use the round fruit of the higuera tree to make the base of the instrument. The pulp is then taken out and small rocks are stored inside the fruit; afterwards, a handle is then inserted and the instrument is ready to be used.

Here is a picture of fruits from the higuera tree





# Chinese Culture

## History of China Pre 1600

China has an incredibly long history of dynasties with their own significant advancements as follows:

- **Xia Dynasty (2100-1600 BCE)**
  - Calendar with solar movements
  - First known use of irrigation in China
  - China began casting bronze
- **Shang Dynasty (1600-1050 BCE)**
  - Logograph writing was introduced
  - China domesticated horses
  - First horse-drawn chariots in China
  - Calligraphy
- **Zhou (1046-771 BCE)**
  - Turpan Water System
  - The teachings of Confucius began
  - First two-digit multiplication table
- **Qin Dynasty (221-206 BCE)**
  - Great Wall of China
  - Terracotta Warriors
- **Han Dynasty (206 BCE - 220 AD)**
  - Rod calculus and the first use of negative numbers
  - Approximated Pi to 7 digits
  - Established silk road
- **Six Dynasties period (220-589)**
  - Boat rudders
  - Woodblock printing
- **Song Dynasty (960-1279)**
  - First government to issue banknotes
  - First use of compass for navigation
  - Gunpowder invented
  - Forensic science invented
- **Yuan Dynasty (1279-1368)**
  - Most accurate calculator for 365 years
  - Teapot invented
- **Ming Dynasty (1368-1644)**
  - Yongle Encyclopedia introduced which was the largest encyclopedia until 2007
  - had the largest economy in the world

Source: <https://learnodo-newtonic.com>

## MODERN CHINA 1600-PRESENT DAY

-Pre 1600-1644 was the Ming Dynasty. From 1644-1912 was the Qing Dynasty. These were the last imperial dynasties in China.  
 -The Republican Revolution in 1911 led to the downfall of the Qing Dynasty.  
 -1912-1949 was the Republic Period.  
 -People's Republic of China was founded on October 1, 1949 by Mao Zedong.  
 -Since then China has been in a communist state and experienced economic growth in 1978.  
Random History During This Time:  
 -1931 most of China floods from 3 major rivers, this claimed about 4 million lives. As of 2019, it was the deadliest natural disaster ever recorded.  
 -In 1991 the first McDonalds opened in China.  
 -In 2008 the Summer Olympics was held in Beijing.  
 -In 1959, Chinese Great Famine claimed 40 million lives.  
 -SARS outbreak in 2002 and the COVID-19 outbreak of 2019-2020 originated in China.



<https://www.chinahighlights.com/travelguide/culture/china-history.htm>

## People's Republic of China



- Capital of China is Beijing
- The currency is Yuan
- Population is 1.4 billion making it the most populated country in the world!
- Current leader is Xi Jinping



## Chinese Clothing:

-In Ancient China, fashion mostly consisted of loose-fitted robes.  
 -The higher the rank one had in the society, the better the clothes they would wear.  
 -Yarn-dyeing and embroidering developed rapidly in the period of the Han Dynasty (206BC-220AD), spurring changes in costumes and adornments.  
 -Casual wear appeared during the Song Dynasty (960-1279), and clothes were simple and elegant. Clothes were luxurious for the upper class yet simple and unadorned in design.  
 -Dramatic changes took place during the Ming Dynasty (1368-1644). There was no limitation to one style and natural beauty was advocated.  
 -During the Qing Dynasty (1644-1911), clothes became elegant, poised, and glorious  
 -Today many Chinese brides will choose modern style Qipao as their traditional suits during their wedding ceremonies.



<https://topancienthistory.com/ancient-chinese-clothing-dresses-outfits/history/>



## Religion:

The current Chinese government has no official religion, but people still can practice their own religion. Ancestor worship is done alongside each of these religions. In order of the percentage of the population that practices, the religion are:

- Buddhism
- Confucianism (not a true religion, but an important ideology)
- Taoism or Daoism
- Islam
- Christianity

Even those that do not practice Buddhism, Confucianism, or Taoism still participate in religious activities due to their significance in Chinese culture overall

<https://www.travelchinaguide.com/intro/religion/>

## Chinese food

can be characterized by 3 key traits:  
 -First, a variety of different colored ingredients are used to make a dish visually appealing.  
 -Secondly, the aroma is essential to many Chinese chefs, influencing them to use many different herbs and spices.  
 -Third, the most important trait, taste, Chinese dishes use five main flavor types: sweet, sour, bitter, hot, and salty.

Chinese cooking has a strong emphasis on making sure that every ingredient has a role in a dish. Each ingredient holds meaning. Every method is calculated to get balanced cooking and to also retain nutrients. This makes Chinese cookery distinct from other cuisines, which only plays on the taste buds.

**Popular Dishes:** Kung Pao Chicken, Peking Duck, Dumplings, Fried Rice.

**Traditional Ingredients:** Soy Sauce, Plum Sauce, Five-Spice Powder, Chili Powder, Sesame/ Peanut Oil, Various Meats, etc.



[https://www.slideshare.net/Mollie\\_Lucas/what-makes-chinese-cooking-unique](https://www.slideshare.net/Mollie_Lucas/what-makes-chinese-cooking-unique)  
[https://www.travelchinaguide.com/intro/cuisine\\_drink/cuisine/cuisine.htm](https://www.travelchinaguide.com/intro/cuisine_drink/cuisine/cuisine.htm)

# Latin Cookbook

## TAMALES

### Tamale Filling:

- 1 ¼ pounds pork loin
- 1 large onion, halved
- 1 clove garlic
- 4 dried California chile pods
- 2 cups water
- 1 ½ teaspoons salt

### Tamale Dough:

- 2 cups masa harina
- 1 (10.5 ounce) can beef broth
- 1 teaspoon baking powder
- ½ teaspoon salt
- ¾ cup lard
- 1 (8 ounce) package dried corn husks
- 1 cup sour cream



## SHRIMP BURRITOS

- 2 tablespoons vegetable oil
- 1/2 cup chopped onion
- 3/4 cup long-grain white rice
- 3/4 teaspoon cumin
- 3/4 teaspoon garlic salt
- 1 1/2 cups chicken broth
- 1/2 cup canned diced tomatoes
- 1 (16 ounce) can refried beans
- 3/4 teaspoon garlic salt
- 1/2 teaspoon ground black pepper
- 12 ounces frozen cooked shrimp without tails, thawed
- 2 teaspoons minced garlic
- 1/2 cup plain yogurt
- 1/2 cup mayonnaise
- 2 teaspoons pureed chipotle peppers in adobo sauce
- 6 (10 inch) flour tortillas, warmed
- 3 cups shredded Cheddar cheese
- 1/3 cup salsa



## PORK STEW IN GREEN SALSA

- ½ cup all-purpose flour
- 1 teaspoon salt
- 1 tablespoon ground black pepper
- ½ teaspoon ground cumin
- 1 (3 pound) boneless pork shoulder roast, trimmed of excess fat and cut into 1-inch cubes
- 2 tablespoons olive oil, or more if needed
- 1 large onion, chopped
- 3 cloves garlic, minced
- 2 cups chopped fresh tomatillos
- 1 (7 ounce) can diced green chiles, drained
- 2 fresh jalapeno peppers, seeded and chopped
- 2 teaspoons dried marjoram
- ½ cup chopped fresh cilantro
- 1 cup water
- 1 pinch salt, or to taste (optional)
- 2 tablespoons sour cream, divided
- 6 sprigs cilantro



## ARROZ ROJO (MEXICAN RICE)

- 2 Roma (plum tomatoes), cored
- 2 tablespoons vegetable oil
- 1 cup minced onion
- 2 cloves garlic, minced
- 1 cup uncooked long-grain white rice
- 1 ¾ cups low-sodium chicken broth
- ¼ cup canned tomato sauce
- 1 jalapeno pepper, chopped
- 2 sprigs fresh cilantro
- salt to taste





# Latin Cookbook

## ARROZ CON LECHE (MEXICAN RICE PUDDING)

- 4 cups water
- 1/2 cinnamon stick
- 2 1/4 cups uncooked white rice
- 4 cups whole milk
- 4 cups evaporated milk
- 1 1/4 cups white sugar
- ground cinnamon (optional)



## MEXICAN CHOCOLATE CHILE CAKE

- Ganache
- 1 1/2 cups chopped dark chocolate
- 2 (1.2 ounce) packages milk chocolate bars, chopped
- 2 tablespoons butter
- 1 cup heavy whipping cream
- 1 tablespoon heavy whipping cream
- 2 tablespoons white sugar
- 



## MEXICAN CHOCOLATE CHILE CAKE

- **Cake Batter**
- dried red chile peppers, seeded, or to taste
- 1 1/2 cups chopped dark chocolate
- 1 cup butter
- 2 tablespoons butter, divided
- 1 cup blanched almonds
- 1 tablespoon unsweetened cocoa powder
- 1 tablespoon all-purpose flour
- 1 teaspoon ground cinnamon
- 2 tablespoons Greek yogurt
- 6 eggs, separated
- 3/4 cup white sugar
- 6 tablespoons white sugar



## CHURROS

- 2 quarts vegetable oil for frying
- 1 cup water
- 1/2 cup margarine
- 1 cup all-purpose flour
- 1/4 teaspoon salt
- 3 eggs
- 1/4 cup white sugar
- 1/4 teaspoon ground cinnamon



**By: Noelle Bocek, Tailyn Randle, Susan Janas, and Sierra Pugh**

# Latin Cookbook

## FRUIT & TAJIN

- Any type of fruit
- Tajin



## MEXICAN BEEF CASOLE

- 1 pound lean ground beef
- 1 (15 ounce) can ranch-style beans
- 1 (14.5 ounce) can peeled and diced tomatoes
- 1 (10.75 ounce) can condensed cream of mushroom soup
- 1 (12 ounce) package corn tortillas
- 4 cups shredded Cheddar cheese
- 2 tablespoons chili powder



## SALSA CHICKEN

- 4 skinless, boneless chicken breast halves
- 4 teaspoons taco seasoning mix
- 1 cup salsa
- 1 cup shredded Cheddar cheese
- 2 tablespoons sour cream (optional)
- 



## SOURCE PAGE

<https://www.allrecipes.com/>



# Maracas

## Plastic Eggs, Recycle Those Easter Eggs!



This Photo by Unknown author is licensed under CC BY-SA-NC.

## DIY Maracas

### Materials you will need:

- Plastic Easter eggs
- One package of dry rice
- Masking tape
- Plastic spoons
- Hot glue and glue sticks
- (Optional: decorations for your maracas such as paint, glitter, markers, and feathers).

### Instructions:

Put 1-2 tablespoons of rice inside each egg and then glue 2 spoons on the egg. The narrow part of the egg should face down so the spoon handles can touch. Then begin to wrap the egg and spoon handle with masking tape to create a base for decoration. Then on top you can paint, draw or create anything you please!

## GPS Final Project

We did this project to enlighten people about the history of maracas.

Kyle Anderson

Isabella Berger

Madison Bjorkman

Kendell Klatt

## References

DIY Maracas:  
<https://www.easycrafts101.com/diy-decorative-maracas/> (Carrie Lindsey)

History of maracas:  
<https://www.huichawaii.org/assets/hill,-john-2016-ahse-huic.pdf> (John Hill)

<http://www.latinmusiccafe.com/2014/12/04/lat-in-music-history-the-maracas-indigenous-origins/> (Hector Aviles)

<https://ourpastimes.com/what-are-maracas-used-for-12187760.html> (Paula Swenson)



shutterstock.com • 1029544456

## Origins

The first recorded maraca was made by a tribal leader in Guinea. It was made from a gourd-like plant called a calabash. The calabash fruit was dried, and stones were placed inside. The calabash would not rot once dried, and the hollowed inside made sonorous sounds. These characteristics made the perfect maraca (John Hill).

## Characteristics

The difference between maracas and rattles or shakers is that maracas are paired. The maraca held in the right hand is higher in pitch than the one held in the left hand (John Hill).

## Facts About Maracas

1. Maracas are part of the percussion school of instruments. (Swenson)

2. Maracas contain three parts: the bell, the filler in the bell, and the handle.(Swenson)

3. The design of maracas has not changed much since its century's old origin. (Swenson)

4. Maracas were originally made of gourds and filled with seeds in order to produce the rattling noise (Swenson)

5. Maracas are very popular in Latin American traditions and Mariachi bands (Swenson).

## Maracas & Music

Maracas are known for the noise that they make when they are used. Maracas are used and well known in Latin American style music. Maracas in Latin American music are spread all throughout. The maracas is an essential musical instrument in Latin music. It is such a simple instrument, but people love to play it. Maracas are also very common in salsa music. The salsa dancers love dancing to the sound of maracas (Hector Aviles).



## Cultural Influences

Although the first maracas originated in Guinea, there are many other cultures who have influenced the spread of their use. Aztecs were the first people to add handles to their maracas. Their maracas were called Ayacachti and were played upside down with feathered handles pointed upward. Early forms of Cuban music, called Son, popularized maracas the most. Machito, a pioneer in Latin American Jazz, was the first maraca player to become successful in America (John Hill).

**By: Kyle Anderson, Isabella Berger, Madison Bjorkman, and Kendell Klatt**



# All About Mexico and its Fascinating Culture

## All About

# México

and its fascinating culture!



### Fast Facts:

- Mexico borders the United States to the south, and the official name of Mexico is the "United Mexican States".
- Mexico's capital is Mexico City.
- Mexico gained its independence in 1821.
- The northern part of Mexico is a desert, but in the south it's a tropical rainforest.
- 130 million people live in Mexico.
- Most people in Mexico are Catholic and speak Spanish.
- Mexico was once home to the Aztec and Mayan civilizations.
- Mexico's flag is green, white, and red.



### Religion:

- Around 82% of Mexican citizens (about 107 million people) are Roman Catholic.
- After Spain conquered the ancient civilizations in Mexico in the 1500s, they converted its people to Catholicism.
- Mexico is home to nearly 7,000 Catholic churches, many of which were built centuries ago dating all the way back to the Spanish spiritual conquest.
- These cathedrals are major tourist hot-spots today due to their spectacular architecture and beautiful artwork.



### Music and Dance:

- Mexico has a very rich music history.
- "Mariachi" bands consist of people singing and playing guitars, trumpets, and violins. They often perform at Mexican parties, or "fiestas", and celebrations like weddings.
- Traditional Mexican folk dancing is characterized by upbeat music, lively dance steps, and dancers wearing long, colorful skirts and dresses, or capes and sombreros.
- Mexico's official dance is the "Mexican Hat Dance" (or "Jarabe Tipatio" in Spanish).



### Mexican Holidays/Festivals:

#### Day of the Dead - "El Día de Los Muertos":



- Day of the Dead takes place on November 1st & 2nd, but used to be celebrated for a whole month. It dates back over 2000 years.
- Its purpose is to celebrate the lives of the deceased on the days of the year when their spirits are believed to return to our world.
- Families create colorful "ofrendas" or shrines for their loved ones and decorate them with flowers, paper crafts, pictures, candles, their favorite foods, and other enjoyable snacks like candy skulls and sweet bread.
- Some Mexican families spend all night in the cemetery beside the graves of their relatives after cleaning and decorating them.

#### The Fifth of May - "Cinco De Mayo":



- Cinco De Mayo is a Spanish holiday that celebrates the victory of the Mexican army over France on May 5th, 1862 in the Battle of Puebla in the Franco-Mexican War.
- Celebrating Cinco De Mayo is more popular in the U.S than in Mexico, especially in cities with large Mexican-American populations honoring their Mexican culture and heritage.
- Cinco de Mayo is celebrated with parades, parties, mariachi music, folk dancing, & food.

### Sports:

- Bullfighting was introduced in Mexico by Spain more than 400 years ago.
- Mexico City is home to "Plaza de Toros México", the largest bullring in the world. It seats almost 42,000 people.
- A typical bullfight usually includes a "charrería", which is like the American rodeo. It is the national sport of Mexico.



- What we call "soccer" in the United States is called "football" in Mexico, and it's the country's most popular sport.
- Crowds fill big Mexican stadiums to cheer passionately for their favorite football teams.
- Baseball and basketball are also commonly played sports, especially by youngsters.



- Since boxing had its first "Golden Age" in Mexico in the 1930s, it has been the country's most popular individual sport.
- Mexico has produced more amateur and professional boxing champions than any other country in the world.



### Language:

- Just like the United States, Mexico does not have an official language. Instead, they have a "de facto" language, meaning they have a dominant language.
- The de facto language of Mexico is Spanish.
- 90% (or approximately 110 million people) are Spanish speaking Mexican citizens.
- The other 10% speak English or an indigenous language.
- The top 3 indigenous languages in Mexico are Nahuatl, Mayan, and Miztec.
- Indigenous languages are common to certain regions of the country.



- Bilingual means that a person can speak two languages fluently.
- 6 million people are bilingual in Mexico.

### Learn Common Spanish Words/Phrases!

- |                   |                  |
|-------------------|------------------|
| • Hola            | • Hello          |
| • Gracias         | • Thank you      |
| • Me llamo es.... | • My name is.... |
| • Lo siento       | • I'm sorry      |
| • Buenos días     | • Good morning   |
| • Buenas noches   | • Good night     |
| • Hasta luego     | • See you later  |
| • Amigo           | • Friend         |
| • Familia         | • Family         |
| • Te amo....      | • I love....     |

### Food:

- *Chilaquiles* are a traditional breakfast food made of fried corn tortillas cut into four quarters and topped with green/red salsa. Eggs (scrambled or fried), chicken, cheese, and sour cream are generally added on top and served with *frijoles* (refried beans).
- *Elofe* is the Mexican name for corn on the cob, and it's sold on nearly every street corner in Mexico. The corn is generally boiled and served either on a stick (eaten similar to an ice cream cone) or in cups after the kernels are cut off the cob. Salt, chili powder, lime, butter, cheese, mayonnaise and sour cream are added for tasty flavor.



- *Mole* is a rich sauce that is often used in Mexican cooking. There are many types of *mole*, all containing about 20 ingredients, the most important being chili peppers. The *mole* must be stirred constantly for a long time. The best-known kind is probably *mole poblano*, a sauce that is typically served with meat, cheese, seafood, beans, and vegetables and then covered in chili sauce.
- *Enchiladas* are some of the most well known Mexican foods. They date back to ancient Mayan times when people in the Valley of Mexico would wrap tortillas around small fish. These days, tortillas are stuffed with meat, cheese, seafood, beans, and vegetables and then covered in chili sauce.





# Our Central American Cookbook

## Our Central American Cookbook

By: McKenzie Sulk, Ashley LaPrise, and Bradlee Sievert



### Mexico-

Grilled salsa roja is a salsa made with grilled tomatoes and veggies, giving this dish a smoky tone.

### Ingredients

- 8 plum tomatoes, cored
- ½ medium white onion
- 4 serrano chiles
- 3 garlic cloves, peeled
- 1 cup (packed) cilantro leaves with tender stems
- Kosher salt



### Directions

1. Grill tomatoes, onion, and chiles on high heat, turning occasionally until lightly charred or fragrant. (4 minutes for chiles, 6-8 minutes for tomatoes and onion).
2. Purée tomatoes, onion, chiles, garlic, and cilantro in a blender until mostly smooth and only small pieces remain; season with salt.

Recipe by: Gabriela Cámara

<https://www.bonappetit.com/recipe/grilled-salsa-roja>

<https://www.britannica.com/place/Mexico>

### Mexico-

**Capital:** Mexico City

**Population:** 128,424,000

**Geography:** Deserts, tropical rainforests, mangrove swamps, and alpine ecosystems.

**Climate:** High temperatures and humid conditions.

**Official Language:** Spanish

**Currency:** Mexican Peso

**Common Animals:** Monkeys, parrots, jaguars, etc.

**Typical Foods:** Beans, corn, tomatoes, avocados, etc.

**Major Sport Celebrated:** Football (soccer)

**A Special Holiday:** Day of the Dead

The Day of the Dead is a holiday celebrated in not only Mexico, but also in other areas of Latin America and the United States. It is meant to honor the dead and to make peace with death and its inevitability. After the Spanish arrived in Mexico and began converting the natives to Roman Catholicism the date was moved to the same dates as All Saint's Day and All Souls' Day.



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# Our Central American Cookbook

## Panama-

Panamanian cocadas (or coconut cookies) are a dessert served in Panama.

### Ingredients

- 3 ½ cups of shredded coconut (sweetened)
- ¾ cups sweetened condensed milk
- 2 ½ tablespoons cornstarch
- ½ teaspoon almond extract
- 1 teaspoon vanilla extract



### Directions

1. Preheat the oven to 375 degrees Fahrenheit.
2. In a bowl, mix together all the ingredients and let sit for about 5 minutes.
3. Using a tablespoon drop a rounded spoonful onto a parchment lined cookie sheet. Place them about an inch apart.
4. Bake for about 15 minutes watching closely and removing when they turn light brown.
5. Remove from the oven and let them cool on a wire rack.

Recipe by: Darlene

<https://www.internationalcuisine.com/panamanian-cocadas/>

<https://www.britannica.com/place/Panama>

<https://travelhippi.com/holidays-festivals-panama/>

## Panama-

**Capital:** Panama City

**Population:** 4,227,000

**Geography:** Mountains and plains are key landscapes in Panama, as well as tropical rainforests.

**Climate:** The climate in Panama is mostly rainy, and hardly drops beneath 78 °F in the coldest month.

**Official Language:** Spanish

**Currency:** Balboa

**Common Animals:** Jaguars, deer, sloths, armadillos, and many more are a part of the animal life in Panama.

**Typical Foods:** Rice, plantains, chicken, pork, etc.

**Major Sport Celebrated:** Basketball

**A Special Holiday:** Carnival

Known as Fat Tuesday almost everywhere else, Carnival is an important holiday in Panama. It has evolved into a four day celebration, involving the weekend and Monday before Ash Wednesday.



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# Our Central American Cookbook

## Guatemala-

Hilacha is a simple but delicious meal served in Guatemala. The word 'hilachas' means 'rags', because the meat that is used for this dish is easily shreddable.

## Ingredients

- 2 lbs beef flank steak or 2 lbs skirt steaks, cubed
- 5 cups water
- 2-3 tablespoons oil
- 1 onion, chopped
- 1 cup tomatoes, chopped
- 1 cup tomatillo, chopped
- 2-3 guajillo chilies, warmed over a flame, deseeded and chopped
- salt and pepper, to taste
- 1 lb potato, peeled and chopped
- 2-3 carrots, peeled and chopped
- ½ cup breadcrumbs
- 1 bunch cilantro, chopped



## Directions

1. Place the beef, water and a big pinch of salt in a large saucepan and bring to a boil over medium heat. Reduce heat to low, cover and simmer for 1 to 1 1/2 hours, or until the beef is very tender.
2. Remove the beef to a bowl, reserving the broth, and set aside to cool

3. When cool enough to handle, shred the beef with your fingers and set aside.
4. While the beef is simmering, place the onion, tomatoes, tomatillos and chiles in a food processor or blender and puree, adding a little water if necessary.
5. Heat the oil in a large pot over medium flame. Add the onion-tomato puree and simmer until the puree is cooked down and darkens somewhat in color, about 10 minutes. Do not burn.
6. Add the shredded beef and about 3 cups of the broth to the onion-tomato puree and season with salt and pepper. Simmer for about 15 minutes.
7. Stir in the potatoes, onions and a little more broth or water if necessary. Simmer until the potatoes and carrots are cooked through, about 15-20 minutes.
8. Stir in the breadcrumbs to thicken the sauce.
9. Then stir in the chopped cilantro, adjust seasoning and serve hot with corn tortillas or rice.

Recipe by: "@AZPARZYCH"

<https://theculturetrip.com/central-america/guatemala/articles/the-10-most-traditional-dishes-from-guatemala/>

<https://www.food.com/recipe/hilachas-guatemalan-shredded-beef-in-tomato-tomatillo-sauce-455937#activity-feed>

<https://www.britannica.com/place/Guatemala/Daily-life-and-social-customs>

<https://maximonivel.com/holy-week-antigua-guatemala/>

## Guatemala-

**Capital:** Guatemala City

**Population:** 17,702,000

**Geography:** Volcanic terrain, mountain ranges, valleys, and limestone.

**Climate:** Both tropical and desert-like conditions exist within Guatemala, with temperatures ranging from 50°F to 80°F depending on the elevation.

**Official Language:** Spanish

**Currency:** Quetzal

**Common Animals:** Deer, monkeys, ocelots, etc.

**Typical Foods:** Empanadas, Chicken pepián, Rellenitos, etc.

**Major Sport Celebrated:** Football (soccer)

**A Special Holiday:** Semana Santa (Holy Week)

Holy week takes place the week of Easter, and is a mix of Spanish traditions and indigenous traditions. It was brought over to Guatemala with the Spaniards, and still is celebrated all these years later.



**By: McKenzie Sulk, Ashley LaPrise, and Bradlee Sievert**

# Our Central American Cookbook

## Honduras-

**Honduran Chimol (Pico de gallo)** Honduran Chimol is a freshly made salsa that is a staple dish on Honduran tables.

### Ingredients

- 1/2 white onion
- 1 green bell pepper
- 1 tomato
- 1/4 cup fresh coriander
- 2 limes
- Salt to taste



### Directions

1. Finely dice equal parts of onion, pepper, and tomato
2. Finely chop coriander
3. Mix everything in a bowl
4. Add salt and lime juice to taste

Recipe by: Darleen

<https://www.internationalcuisine.com/honduran-chimol/>

<https://www.britannica.com/place/Honduras>

## Honduras-

**Capital:** Tegucigalpa

**Population:** Over 9.27 million

**Geography:** Many mountains, volcanic highlands, and various river beds

**Climate:** Generally hot with high humidity

**Official Language:** Spanish

**Currency:** Honduran Lempira

**Common Animals:** Iguanas, deer, jaguar, and many birds, insects, and reptiles

**Typical Foods:** Pico De Gallo, Tamales, Sopa de Hombre, and corn is a major staple

**Major Sport Celebrated:** Football (soccer)

Honduras declared independence on November 5th, 1838 after gaining freedom from both Spain and Mexico in 1821 and 1823.

**A special holiday:** Feria de San Isidro

During Feria de San Isidro which is held annually in the town of La Ceiba on the third Saturday in May, over a quarter million Hondurans join together in celebration for the carnival. Local bands play, restaurants and bars are filled, and the celebration is finished with a large parade.

The celebrations begin a week in advance, and are very similar to Mardi-Gras in New Orleans.



**By: Mckenzie Sulk, Ashley LaPrise, and Bradlee Sievert**



# Our Central American Cookbook

## El Salvador-

Casamiento is a black bean and rice dish which is a delicacy served in El Salvador

### Ingredients

- 2 Tbsp vegetable oil
- 1 onion, finely chopped
- 1 bell pepper, finely chopped
- 3 cloves garlic, minced
- 1 can black beans, drained, liquid reserved
- Salt and pepper, to taste
- 2 cups cooked rice



### Directions

1. Heat oil in a large pot. Add the onions, bell pepper, and garlic.
2. Sauté for two to three minutes, until tender. Stir in the drained beans, some of the bean liquid, and salt and pepper.
3. Cook at medium-low until heated through.
4. Add rice and stir until cooked through.
5. Adjust seasoning and add a little more bean liquid if necessary. Serve hot.

<https://www.archball.org/recipes-from-el-salvador-casamiento?print=pdf>

<https://www.britannica.com/place/El-Salvador>

## El Salvador-

**Capital:** San Salvador

**Population:** Over 525,900

**Geography:** Located on the Central American Volcanic axis, various highlands and lowlands, sits on the coast of the Pacific Ocean

**Climate:** Tropical, generally more warm than hot and is moderated by the elevation

**Official Language:** Spanish

**Currency:** Spanish Peso, and the US dollar

**Common Animals:** Molmot, pumas, iguanas, boa constrictors

**Typical Foods:** Pupusas, Curtido, Tamale, Casamiento

**Major Sport Celebrated:** Football (Soccer)

El Salvador declared itself an independent republic in 1839, although the next several decades were marked by frequent revolutions.

**A special holiday:** El Salvador celebrates their independence from Spain every year on September 15th. Celebrations include all day parades, parties in houses, and at night; fireworks.



# Our Central American Cookbook

## Costa Rica-

Sweet Plantains is a typical dish in Costa Rica and can be served as both a dessert or a side to a meal

### Ingredients

- 4-6 ripe plantains, cut into 1" slices
- 1/2 Cup of margarine or butter
- 1 1/2 Cup of sugar
- 1 tsp of ground cinnamon
- 1/2 tsp ground nutmeg
- 1/4 tsp ground cloves
- 1 lime
- 2 Cups of water
- 1 tsp pure Vanilla extract



### Directions

1. In a large pan, melt the butter and saute the plantains on medium heat until golden. Add 1 cup of sugar, cinnamon, nutmeg, clove, lime juice and vanilla. Stir for 1 min.
2. Add water and sprinkle on the remaining sugar.
3. Reduce heat to low and cook until the liquid is reduced and caramelized. Serve hot, or let cool. <http://www.cheapfoodhere.com/cheap-recipes/the-5-best-costa-rican-recipes>

## Costa Rica-

**Capital:** San Jose

**Population:** Over 4.9 million

**Geography:** Many mountains, active volcanoes, and rivers

**Climate:** Tropical, marked with the dry seasons(Dec-April) and the wet seasons(May-Nov)

**Official Language:** Spanish & Costa Rican Spanish

**Currency:** Costa Rican Colon

**Common Animals:** Sloths, monkeys, turtles, dolphins

**Typical Foods:** Sweet plantains, pinto and beans, Casado

**Major Sport Celebrated:** Football (Soccer), sport fishing, bullfighting

The Republic of Costa Rica gained independence on September 15, 1821, as a result of the Mexican War of Independence that lasted from 1810 until 1821. Costa Rica never fought for independence, but Guatemala declared the independence of all countries in Central America in 1821.

### A special holiday:

Costa Ricans celebrate their day of independence every year on September 15th. To celebrate, they crowd the streets and participate in parades and an all day celebration wearing traditional clothing from their culture.





# Our Central American Cookbook

## Belize-

### Stew Beans

This dish is typically served on top of rice and is a popular staple in Belize

### Ingredients

- Fresh Red Kidney Beans
- Oil- for best results use coconut oil
- ½ Onion
- ½ tsp. Black Pepper
- ¼ diced Small Green Pepper
- 1 tbsp Chili Powder



### Directions

1. Cover beans with water and let sit overnight
2. Clean the beans and cover with two inches of water
3. Boil for an hour
4. Add onion, black pepper, green pepper, chili powder, and oil
5. Simmer until tender, adding water as required to keep beans covered
6. Once the beans are soft, cover and let stand for an hour

<https://belize.com/belizean-recipes/>

## Belize-

**Capital:** Belmopan

**Population:** 383,071

**Geography:** Mainly flat terrain with swampy coastal plains and hills and low mountains in the south



**Climate:** Subtropical with distinct wet and dry seasons

**Official Language:** English

**Currency:** Belize Dollar

**Common Animals:** Jaguar, Ocelot, Tapir

**Typical Foods:** Rice and beans, Empanadas

**Major Sport Celebrated:** Football (American Soccer), volleyball, cycling

Belize gained independence January 1964

**A special holiday:**

Independence day is celebrated through flag raising, music, dancing, carnivals and an array of Belizean food



**By: McKenzie Sulk, Ashley LaPrise, and Bradlee Sievert**

# Our Central American Cookbook

## Nicaragua-

**Capital:** Managua

**Population:** Over 6.4 million

**Geography:** Mostly coastal plains that rise up to mountains and volcanoes

**Climate:** Tropical with dry summers and wet winters

**Official Language:** Spanish

**Currency:** Nicaraguan cordoba

**Common Animals:** puma, macaw, crocodile

**Typical Foods:** corn, beans, plantain

**Major Sport Celebrated:** Baseball

Nicaragua was founded September 15, 1821

**A special holiday:**

La Purisima is a major holiday that is a week long celebration of the Immaculate Conception



## Nicaragua-

Fresco De Piña y Arroz

### Ingredients

- Pineapple peel/ rind
- ½ cup uncooked rice
- Water

### Directions

1. Fill water in pot to cover Pineapple rinds
2. Boil for 10 minutes
3. Add rice until it splits/puffs up
4. Allow to cool and then strain
5. Dilute with twice the amount of water
6. Add sugar



<https://www.nicaragua.com/culture/cuisine/recipes/>

**By: McKenzie Sulk, Ashley LaPrise, and Bradlee Sievert**



# Our Central American Cookbook

## Columbia-

### Arepas

Arepas are usually served for breakfast, as a side dish, or even for a quick meal

### Ingredients

- 1 cup warm water
- 1 cup pre-cooked white corn meal
- 1 cup shredded mozzarella
- 1 tbsp butter
- ¼ tsp salt
- Cooking spray



### Directions

1. Mix water, corn meal, mozzarella, butter and salt
2. Knead the mixture until dough has a soft consistency and shape into balls
3. Place them between two sheets of plastic wrap and roll out with rolling pin
4. Cut circles in the dough with a cup through the plastic wrap and remove the plastic afterwards
5. Coat griddle with spray and grill Arepas until golden brown, about 5 minutes a side

<https://www.allrecipes.com/recipe/262048/colombian-arepas/>

## Columbia-

**Capital:** Bogota

**Population:** Over 49.6 million

**Geography:** Volcanoes and mountains, tropical beaches, deserts, and grassland

**Climate:** Tropical and Isothermal

**Official Language:** Spanish

**Currency:** Colombian Peso

**Common Animals:** Anteaters, Capybaras, jaguars

**Typical Foods:** beans and rice, empanadas

**Major Sport Celebrated:** Football (Soccer), cycling, roller skating

Columbia gained independence July 1810

**A special holiday:**

Seman Santa is an important holiday in Colombia where Holy week is celebrated.



**By: McKenzie Sulk, Ashley LaPrise, and Bradlee Sievert**

# Mexican Culture of Sombreros

## Mexican Culture of Sombreros

### About Sombreros:

- A Sombrero is a traditional Mexican hat.
- Traditional sombreros have a wider brim that is slightly upturned at the edge.
- We are not 100% certain who



invented the sombrero, but here are some theories

- Mestizo workers may have created this hat to shield the heat from the sun
- They could have been created by horse riders from Guadalajara to make a part of their uniform
- Some believe that the Texans took this hat from the Spanish to shield the sun as well



Some Types Of Sombreros:

- The word "sombrero" comes from the spanish word "sombre" meaning shade
  - This enabled people to work for longer periods of time without getting drained by the sun's rays

- The type of sombrero that one is wearing can reflect the status of the person
  - Usually people who wear sombreros with thin straw shows that this person is in a lower social class
  - If one has a hat made of felt, they usually have a higher economic class
- Traditional Sombrero
  - Largest sombrero
  - Mostly worn during Mariachi musicians and celebrations
- Modern/stylish Sombrero
  - Fashionable use by women who have a desire for protection from the sun
- Full Sombrero
  - Large and heavy, usually made out of felt and some small decorations



Cultural  
of

Importance  
Sombreros:



# Mexican Culture of Sombreros

- Sombreros are a part of Mariachi musicians costumes
- Workers in Mexico use this to shield the hot sun from their face, shoulders, and neck.
- "Strength and Power" are associate with sombreros because of the power of the Guadalajara (horseback riders) had, and that is why it is incorporated into their outfit

## DIY Sombrero

### Materials needed:

- Paper plate
- Dixie cup
- Scissors
- Ribbon or yarn
- Pom poms
- Hole puncher
- Glue gun
- Pencil
- Pipe cleaners



### Steps:

1. Paint the Dixie cup and paper plate the desired color.

2. Place the Dixie cup face down on the paper plate and glue the cup to the plate. Wait for the glue to dry (if using a hot glue gun get help from an adult)
3. Decorate! Use pom-poms and pipe cleaners to make the sombrero reflect you!
4. Hole punch two holes on the opposite sides of the hat, they should be straight across from each other.
5. Feed ribbon or string through the holes. After feeding in the string or ribbon tie a knot at the end big enough to not slip out. Pull tightly to ensure. Cut ribbon to desired length and repeat on the other side.
6. Wear your sombrero!

Haddie Enderby, Tahya Ihander, Maleek Fochesato

### Sources:

<http://www.historyofhats.net/hat-history/history-of-sombrero/>

<https://classroom.synonym.com/the-history-of-mexican-sombrero-hats-12079482.html>

[https://americanhistory.si.edu/collections/search/object/nmah\\_1384350](https://americanhistory.si.edu/collections/search/object/nmah_1384350)

**By: Haddie Enderby, Tahya Ihander, and Maleek Fochesato**



**Thank you!**