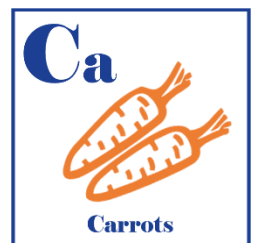
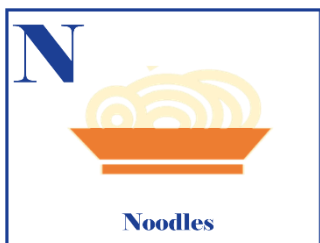
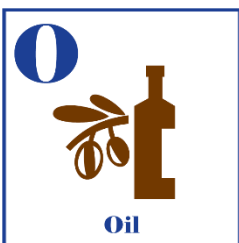


Rickoid Food Science & Recipes



This recipe book is dedicated to the incredible supporters of the Center for Excellence in Education and its Research Summer Institute & USA Biolympiad Alumni.

Thank you to all the Rickoids who contributed to this book. Enjoy!

The Center for Excellence in Education nurtures careers of excellence and leadership in science, technology, engineering, and math (STEM) for academically talented high school and college students.

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Savory Recipes

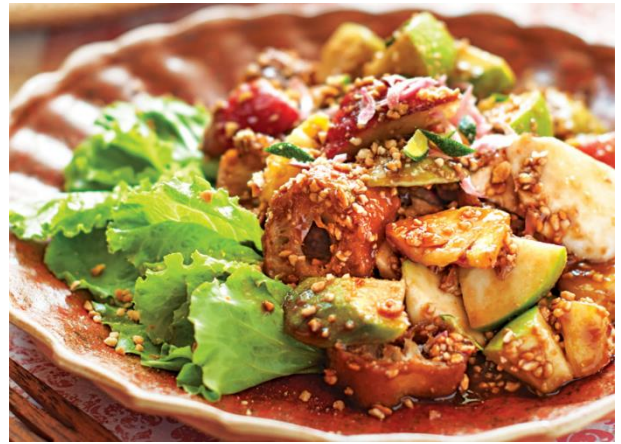
Rojak

Country of Origin: Singapore

Yield: Serves four

Prep time: 30 minutes

Total time: 45 minutes - 1 hour



Ingredients

For Rojak sauce:

50 g	Peanuts
2 tbsp	Tamarind
50 mL	H ₂ O
3 tbsp	Brown Sugar
1 tbsp	Cumin Powder
To taste	Salt

For chopped food items:

50 g	Turnip
50 g	Cucumber
50 g	Lettuce
50 g	Pineapple
100 g	Bean Sprout (blanched)
50 g	Green Apple
4 pcs	Fried Dried Beancurd (Taupok)

Directions

1. Roast peanuts (50 g).
2. Grind into fine powder.
3. Make tamarind paste (2 tbsp).
4. Mix paste, 50 mL H₂O, grounded peanuts, brown sugar (3 tbsp), cumin powder (1 tsp), salt (according to taste).
5. Bring mixture to a boil and let it cool, until a thick sauce is formed.
6. Chop the following vegetables/fruits/food items into small pieces:
 - Turnip: 50 g
 - Cucumber: 50 g
 - Lettuce: 50 g

- Pineapple: 50 g
- Bean Sprout (blanched): 100 g
- Green Apple: 50 g
- Fried Dried Beancurd (Taupok): 4 pcs

7. Mix sauce with chopped items, and the Rojak is ready to be eaten!



Did you know...

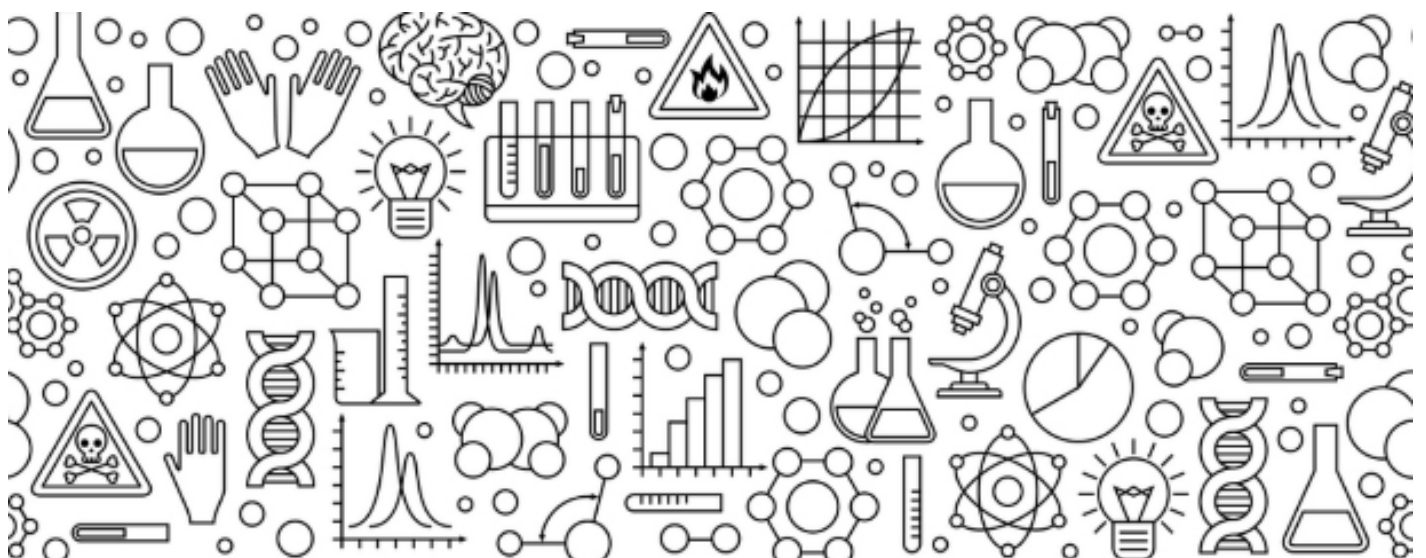
The polysaccharide in Tamarind seed is unique. Researchers are investigating possibilities for use in the cosmetic and pharmaceutical industries.

(Kumar et al, 2008, CRFSN)



“This is a delicious, unique Singaporean salad dish!”

Aditya Khandelwal



Crispy Duck

Country of Origin: China

Yield: Serves 4

Prep time: 30 minutes

Total time: 5 hours



Ingredients

1	Duck
4 tbsp	Chinese five-spice powder
4	Star anise
2	Garlic cloves, bashed
Fresh Ginger	4 cm piece, peeled and roughly sliced
4	Spring onions, trimmed and cut in half
20	Chinese pancakes
To taste	Sea salt and freshly ground black pepper

Dipping Sauce:

1 1/4 c	Instant nonfat powdered milk
1/2 c	Sugar
1/3 c	Boiling H ₂ O
3 tbsp	Butter or margarine
1/3 c	Lemon juice
8 oz pkg	Cream cheese, room temperature

Directions

1. Preheat the oven to 160°C.
2. Cut off and discard the flap of fat that hangs over the entrance to the duck's body cavity.
3. Pat the inside of the cavity with kitchen paper, then season with salt and pepper.
4. Rub the entire outside of the duck with the five-spice powder, massaging it into the skin.
5. Put the star anise, garlic, ginger and spring onions into the cavity.

6. Place the duck on a rack set over a roasting tin and roast for 160°C for 1 hr then turn the oven down to 140°C and cook for a further 2 1/2–3 hrs, until the flesh is tender and the skin crisp.
7. The dipping sauce can be made at the same time.
8. Place a small saucepan over a medium heat and add a dash of oil. When hot, fry the garlic until tender.
9. Add 3 tbsp of the black bean sauce, the vinegar, 1 tablespoon soy sauce and 1/2 tbsp honey. Mix well and cook over a low heat for 3–4 min, until warmed through.
10. Taste and adjust the flavors as necessary – you might need a little more soy sauce or honey, depending on the saltiness or sweetness of the black bean sauce you are using. Transfer to dipping bowls.
11. Once the duck is cooked, transfer to a plate, cover loosely with foil and set aside to rest for 15 min.
12. When the duck has rested, heat the pancakes according to the packet instructions.
13. Meanwhile, flake the meat off the duck by pulling it apart with two forks.
14. Serve with the dipping sauce and the warm pancakes.



Did you know...

Left over nonfat powdered milk can be used to block immunoblots. Immunoblots utilize antibodies to detect proteins of interest. Blocking prevents non-specific binding.

(Jagus et al, 1984 New Protein Techniques. Methods in Molecular Biology)



Arthur Hu

Kespe

Country of Origin: Kazakhstan

Yield: 4 servings

Prep time: 30 minutes

Total time: 1.5 hours



Ingredients

For broth:

0.5 kg	Horse meat with a bone
2.5 kg	Tap H ₂ O
5	Black pepper corns
1	Bay leaf

For mirepoix (*zazharka*):

3/4	Medium carrot, sliced thin
1	Onion, sliced thin
1/2	Garlic clove
1 tsp	Sunflower oil

Additional Ingredients:

3	Potatoes, diced
Handful	Handmade thin wheat-egg noodles
1 tbsp	Fresh and cut scallions
1 tbsp	Fresh dill

Directions

1. Make horse meat broth:
 - a. Half of a kg of the horse meat on a bone is put in 2.5 L of boiling H₂O.
 - b. When meat starts boiling, foam should be removed.
 - c. 5 whole black peppers and 1 bay leaf are added to the broth.
 - d. Broth should boil for 1 to 1.25 hr.
 - e. After that time the broth should be sieved to remove pepper and bay leaf, horse meat is taken out to be eaten separately.

2. Chop 3 potatoes into small cubes of roughly 2 cm in all dimensions and put them into a sieved broth. Cook for 20 total min or until done.
3. Meanwhile, sauté the onion cut into thin strips in a teaspoon or less of sunflower oil. After approximately 1-2 min, when the onion softens, add thin strips of carrot and continue the sauté. Add a crushed half of a garlic clove for flavor.
4. After 5 min of potatoes cooking, add the mirepoix to the broth.
5. 10 min before potatoes are done, add the handful homemade (or store bought) wheat-egg noodles.
6. 5 min before the potatoes are done, add a 1/2 tbsp of cut scallions and a 1/2 tbsp of dill.

Recipe Notes

1. Mirepoix is called a zazharka in Kazach
2. Horse meat can be substituted with mutton or chicken in case it is hard to find or not for one's taste buds. The taste of kespe will change, but the basic procedure and overall feel of the dish should not be very different.
3. As seen in the picture, in my family we eat it with *bauyrsaks* (basically donuts but not sweet) and pickled cabbage.



Did you know...

Sunflower oil methanolysis yields methyl esters (biodiesel) and glycerol. The methanolysis reaction consists of three reversible reactions.

(Vicnete et al, 2005, Industrial & Engineering Chemistry Research)



“Kespe is a Kazakh noodle soup that is one of our family traditions. My Mom used to make it for my grandfather and we still make it at home. It is very simple, but at the same time is just what one needs – warm, savory, and filling.”

Eldar Urkumbayev

Chicken Stew

Country of Origin: USA

Yield: Serves 5

Prep time: 30 minutes

Total time: 1.5 hours



Ingredients

1	Chicken
2	Carrots
1/4	Pumpkin
2 stalks	Celery
6	White button mushrooms
6	Brown button mushrooms
1	Onion
2 tsp	Peppercorn
4 sprigs	Rosemary
6 c	H ₂ O

Directions

1. Boil 6 c of H₂O or chicken stock in a pot.
2. Chop the following items: 2 carrots, 1/4 pumpkin, 2 stalks of celery, 1 onion, 1 chicken
3. Add the carrots and celery to the pot.
4. Clean the chicken with salt H₂O and rinse with hot H₂O.
5. Add the chicken, white and brown button mushrooms to the pot.
6. Sauté the peppercorn and chopped onion, then add to the pot.
7. Pan fry the pumpkin with rosemary, then add to the pot.
8. Simmer for 45 min to 1 hr.



**Emma
Tan**



Did you know...

Rosemary oil was shown to have antimicrobial activity against the bacterial pathogen, *Staphylococcus aureus*. Active film containing rosemary oil is being tested for food packaging.

(Mohsenabadi et al, 2018 *International Journal of Bio. Macromolecules*)

Crispy Roast Pork Belly

Country of Origin: China

Yield: 4 servings

Prep time: Hours to overnight

Total time: 1 day



Ingredients

750 g	Pork belly
20 g	Scallion
30 g	Fresh ginger, sliced
2 tsp	Sea salt
1/2 tbsp	Five-spice powder
1/4 tsp	White pepper

Directions

1. Wash the pork belly.
2. Place the pork, ginger, and scallion in a pot and add enough cold H₂O to just cover the pork.
3. Heat over medium heat and boil until the color of the meat starts to change, approximately 10 to 15 min.
4. Pull out the sharp hairs on the pork skin with kitchen-specific tweezers.
5. Scrape with a knife to remove impurities from the skin.
6. Wash the meat and pat dry with paper towels.
7. Use a fork, bamboo stick or the tip of a sharp knife to prick holes on the skin.
8. Mix all the five-spice powder and 1 tsp of the salt with the white pepper thoroughly, then spread them evenly on the meat. If there is any marinade on the skin, wipe it off with a paper towel.

9. Spread the remaining 1 tsp of salt on the pig skin and marinate in the refrigerator for several hours or overnight.
10. Preheat the oven to 430°F.
11. Put warm H₂O in the baking tray, find a small bowl that can be put into the oven and put it in the baking tray, and then put the pork belly on the small bowl. Do not let the pork touch the H₂O, if it does, wipe it off with a paper towel.
12. Roast for 30 min first, at this time the skin of the pork belly has started to foam! Remove the pork belly from the oven and prick holes in the meat with a bamboo stick in a vertical direction. The more the better.
13. Put it in the oven at 390°F and bake for another 90 min. Or roast until the crispy skin has formed.
14. After baking, move it to the cooling rack. After 15 min, you can cut it into pieces.



Did you know...

In five-spice, clove was shown to be the major contributor to antioxidant activity.

(Bi, et al, 2014 International Journal of Food Sciences and Nutrition)



“An authentic Chinese recipe translated by my parents.”

Judson Lam

Mountain Paella

Country of Origin: Spain

Yield: Serves 4

Prep time: 30 minutes

Total time: 45 minutes - 1 hour



Ingredients

300 g	Rice
500 g	Mushrooms (<i>Lactarius deliciosus</i>)
200 g	Truffle sausages
80 g	Blood sausage
9 pcs	Calçots (long onion)
1 pcs	Onion
1/2 pcs	Red pepper
2 pcs	Tomatoes
1 L	Meat soup (broth)
2 pcs	Garlic
2 spoonful's	Red pepper pulp

Directions

1. Prep:
 1. Clean the mushrooms and the calçots.
 2. Add salt and oil to the mushrooms and the calçots.
 3. Cook the mushrooms and the calçots in the oven at 200°C for 10 min.
 4. Grate the tomatoes.
 5. Prepare the meat soup or buy a pre-cooked one.
2. Chop the onion, the red pepper, and roast them in a frying pan with olive oil and garlic until golden.
3. Add the truffle and blood sausages and wait until they are cooked.
4. Add the grated tomatoes.
5. Add the rice and stir for 4 min.
6. Add the mushrooms and the meat soup and stir again.
7. Add the calçots cut into small pieces.
8. Stir again and cook for 20 min.

9. Decorate with some parsley, and the Mountain paella is ready to eat!



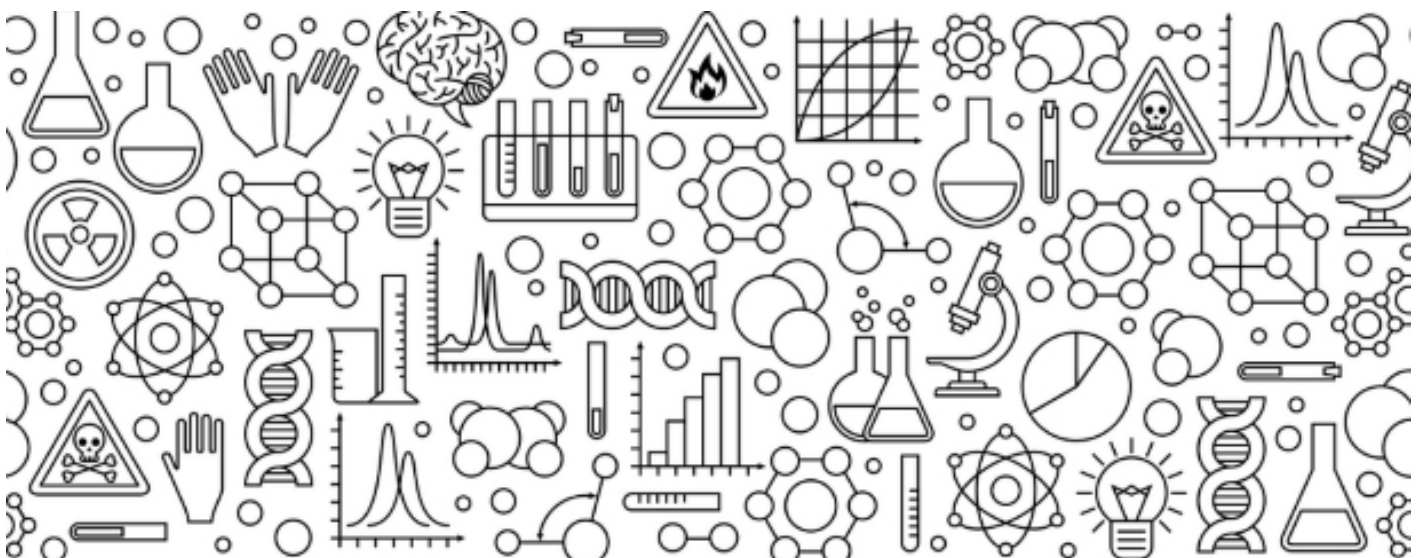
Did you know...

Tomatoes can be thought of as a cardioprotectant. Several nutrients are antioxidants and may serve additional protective functions.

(Wilcox et al, 2003, Critical Reviews in Food Sci and Nutrition)



Laia Xiao Planas



Hot Pot

Country of Origin: [China](#)

Yield: [Serves 4](#)

Prep time: [30 minutes](#)

Total time: [1.5 hours \(variable\)](#)



Ingredients

For spicy base:

1 bag Haidilao Hot Pot Spicy Sauce

For non-spicy base:

1 bag Haidilao Mushroom Flavor Hot Pot Seasoning

For chopped food items:

**As many as
you want** Potatoes
2 trays Beef
1 tray Duck Legs
1-2 cans Bamboo
2-3 cans SPAM Lunch Meat
1-2 bags Tofu Skin
**Whatever
amount!!** Anything you want!!

Directions

1. Prepare the pot by adding the spicy broth to one side and the mushroom flavored broth to the other along with H₂O on both sides.
2. Then, heat the pot until both sides start boiling.
3. Prepare the chopped items (chop them, wash them, etc.) and place them around the side of the pot.
4. Once the pot is ready, place food items into whichever broth you prefer and wait until fully cooked (the time for this will depend on the food item you choose).
5. Enjoy the food item! You can dip this into any type of sauce that you would like as well (I would suggest sesame oil!)
6. Repeat!!



Did you know...

Bamboo culms share water and nutrients *via* rhizomes (root system). This allows for the rapid growth and aides in the colonization of new areas.

(Fang et al, 2019, Front. Plant Sci.)

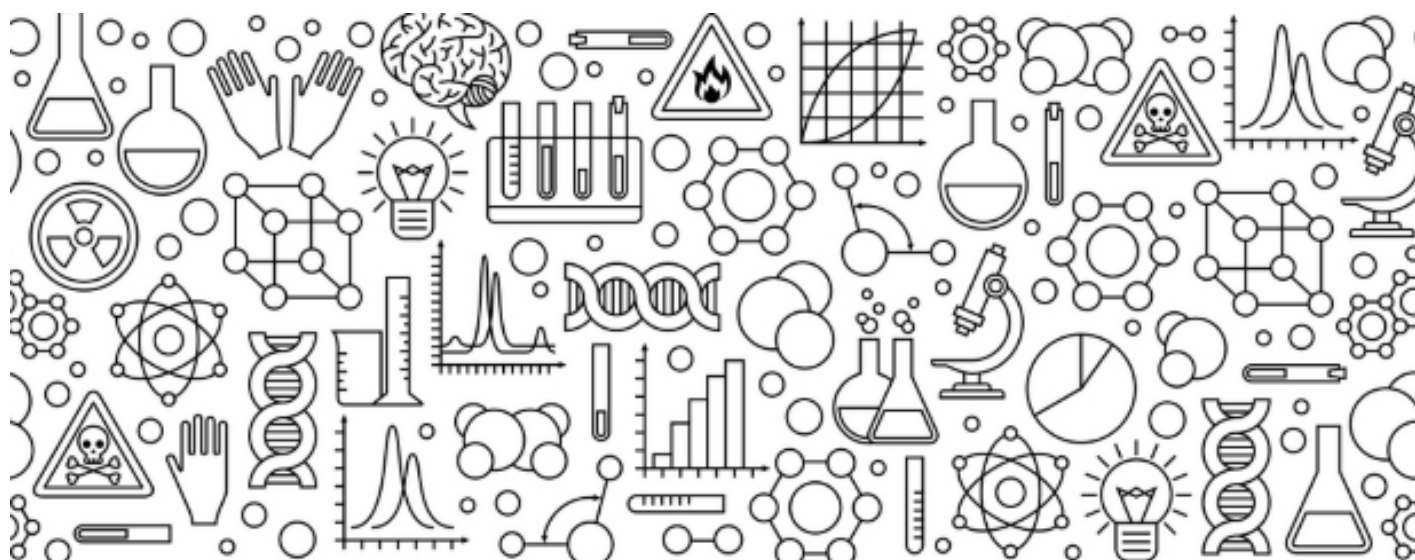
2020

**USA
BIOlympiad**

Rickoid

Lucy

Zou



Peking Duck

Country of Origin: China

Yield: Serves 4

Prep time: 1 day

Total time: 1 day, 2 hours



Ingredients

For the duck:

1 whole	Duck
2 tbsp	Maltose
1/2 tsp	White vinegar
2 tbsp	Hot H ₂ O

Additional Ingredients:

1 whole	Cucumber
2 whole	Leek onions
2 tbsp	Sweet bean sauce
200 g	Flour
1/8 tsp	Salt
32 tsp	Hot H ₂ O
1 tsp	Oil

Directions

1. Select an *Anas platyrhynchos domesticus* with leaner meat.
2. Brush the duck's epidermis with a solution of maltose, hot H₂O, and white vinegar.
3. Study for the USA Biolympiad for 30 min.
4. Come back and brush the skin again.
5. Let dry for 1 day.
6. Roast according to this procedure:
 - a. 20 min at 180°C.
 - b. Turn over and 20 min at 180°C.
 - c. 30 min at 120°C, or until the skin is crispy.
7. Slice the meat.
8. Make Peking Duck pancakes:
 - a. Mix flour, salt, and hot H₂O

- b. Knead the dough
 - c. Study for the USA Biolympiad for another hour.
 - d. Come back and roll the dough into a thick rope, cut into pieces, then flatten into small pancakes.
 - e. Brush oil over the pancakes, layer them, and then steam them.
9. Shred the following into small strips:
- a. Cucumber
 - b. Leek onion
10. Prepare sweet bean sauce.



Did you know...

White vinegar has been shown *in vivo* and *in vitro* to have antitumor effects. However, researchers have yet to fully understand why.

(Johnston et al, 2006, MedGenMed)



Richard Zhu

Barszcz z uszkami

Country of Origin: Poland

Yield: 4-6 servings

Prep time: Several days

Total time: Several days



The picture comes from:
<https://commons.wikimedia.org/wiki/File:Uszka-aasica.jpg>

Ingredients

For Barszcz:

2	Onions
2	Carrots
1	Celery root
1	Parsley root
1/8	Cabbage
3-4	Medium beetroots
2-3	Dried mushrooms (preferably wild)
2-3	Medium apples
2-3	Bay leaves
1 tbsp	Salt
1 tbsp	Sugar
1 tbsp	White vinegar
According to taste	Peppercorns, allspice, dried marjoram, Lemon juice, garlic (crushed)

For dumplings:

2	Eggs
200 g	Flour
250 g	Mushrooms
1	Onion
A little bit	Butter, Oil
According to taste	Salt and Pepper

Directions

Start a few days in advance by preparing pickled beets:

1. Wash, peel and slice one beetroot into thin slices, place it in a clean glass jar or a pickling container.

2. Add a tablespoon of sugar, a tablespoon of salt, crushed garlic cloves, optionally some bread and cover with H₂O.
3. Set on the counter for five days to sour.

Prepare the vegetable broth:

1. Dice onions, carrots, celery, and parsley, chop cabbage into small stripes and place in a jar with 2 L of H₂O.
2. Add peppercorns, allspice, and bay leaves.
3. Bring to boil, reduce the heat to low and keep simmering on low for up to one hour.
4. Wash, clean, peel and slice remaining beets, add them to the broth.
5. Add H₂O to the mushrooms, let it soak for up to one hour, transfer mushrooms to the broth.
6. Remove cores from the apples and add the apples to the broth.
7. Further add pickled beets together with H₂O that remained from pickling.
8. Simmer on low for about 1/2 hr.
9. Add vinegar to preserve deep red color. Strain the soup and transfer the clear barszcz to another pot. Season to taste with salt, pepper, sugar, vinegar and/or lemon juice (barszcz should be a little bit sour, a little bit sweet, and not bitter at this point).

Uszka (dumplings):

Prepare Mushroom Filling

1. Chop one onion and caramelize it with butter on a frying pan.
2. Chop mushrooms (it can be done with a food processor) and add to the onions, cook on low for about 30 min until all the H₂O released by the mushrooms evaporates.
3. Season with salt and pepper to taste.

Prepare Dumplings

1. Mix flour with a pinch of salt and a little bit of oil, the middle and crack an egg into it.
 - a. Optionally add some milk and knead the dough, allowing it to rest before shaping.
2. Roll out the dough onto a lightly floured surface until it's about 3 mm thick.
3. Cut out individual circles of about 5 cm diameter (a tea glass can be helpful for that) for individual dumplings.

4. Add one tablespoon of filling into the middle of each dough portion, fold in half sealing the dumpling tightly, connect the distal ends.
 - a. This way, the dumpling takes form of “uszka” (ears), similar to tortellini.
5. Cook dumplings for 2-3 min in boiling H₂O.
Serve the soup hot, with 5-6 dumplings per serving and sprinkle of dried marjoram. Smaczniego! (*Enjoy your meal!*)



Did you know...

- The red pigment produced by beets and other vegetables are called Betacyanins. This water-soluble nitrogen-containing pigment is an antioxidant.

(Taira et al, 2015 FoodChem)



“There is nothing more traditional for a Christmas Eve dinner in Poland than a typical Polish beetroot soup with dumplings. In a typical family setting it is rarely eaten more than once a year. It is a pity, as it is light, refreshing and, most of all, completely vegan (dumplings are –only- vegetarian, but for sure recipe can be adapted to avoid the use of eggs, butter and milk), so it can and should be enjoyed more often. Typical recipe is based on home-made vegetable broth.”

Pawel Sledz

Desiccated Chicken

Country of Origin: USA

Yield: Varies

Prep time: 15 minutes

Total time: 4-5 hours



Ingredients

As many as
desired

Chicken Wings

As many as
desired

Mostly Empty Sauce Jars

Directions

1. Cover a cookie sheet with aluminum foil, then place the wings, skin side up, on the sheet.
2. Coax open the wing joints so that they are slightly spread out.
3. Then go through the refrigerator—particularly the shelves in the door—and look for small jars that have just a bit of sauce (of any type) and put the bits of sauce on the chicken wings. Best to limit the types of sauce on each area of wing.
4. Wash out the empty jars and recycle them.
5. Place the cookie sheet in the oven at 350°F for 4-5 hrs until the fat has rendered from the wings, the sauce has dried up, and the bones are crisp.

Remove, cool, and crunch!

Near-Death Salami

Yield: Varies

Prep time: 5 min

Total time: 15 min



Ingredients

As much as
desired

Moist Salami and Sausage

Directions

1. With an extremely sharp knife, cut very thin slices of salami. If possible, the slices should be translucent.
1. While you are cutting, heat a skillet on the stove so that it is too hot to touch.
2. Place the slices of salami in the skillet. They will curl and writhe as they fry in their own fat. No need to turn them over if you've cut thin enough.
3. When they are slightly charred, and just about to burn, snatch the slices from the skillet and put on a paper towel to drain any remaining fat.

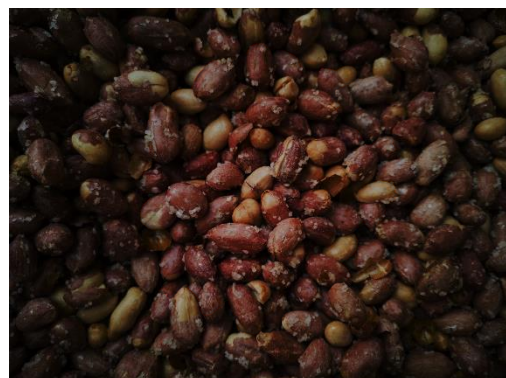
Another crispy treat!

Hot Nuts

Yield: Varies

Prep time: 1 min

Total time: 5 min



Ingredients

As much as
desired

Roasted Nuts

Directions

1. Roasted nuts that you buy in a package are rarely roasted enough. This can be corrected with the microwave. You just lay the nuts out on a plate, not more than two layers thick.
2. Then microwave them for at least 3 min.
3. How long you must microwave will depend on the strength of the oven, which is hard to control.
4. Just watch the cashews. When they start turning black rather than brown, take the nuts out. They will be very hot—be careful. Don't leave them in the microwave or they won't cool fast enough.
5. And don't try to taste them. They will be soggy and hot until they cool. But when they cool, they will be crispy and delicious. And have a more caramelized flavor than the ones you just buy.

One of the bonuses of this recipe is that the aroma wafts through the house. It smells like Crackerjacks used to taste when you were a kid.



Did you know...

Scientists have identified five genetic loci associated with the ability to taste bitterness, such as in coffee. Genetic variations in these loci might be the reason each individual experiences bitterness differently.

(Zhong, et al, 2019, Human Molecular Genetics)



"I am a famously awful cook. Three words that strike terror into the hearts of family and friends: "I'll make dinner".

Nonetheless, I feel obliged to share with you three of my favorite dishes that no one else seems to enjoy."

Mark Saul

James's Rice & Beans

Country of Origin: USA

Yield: A lot

Prep time: 30 minutes

Total time: 1 hour



Ingredients

2 c	Flour
1 1/2 c	Rice-cooker cs of rice, precooked (1 1/8 "real" c, precooked)
2 cans (15.5 oz. each)	Garbanzo beans (<i>chickpeas</i>) drained (3 c by volume)
1/2 large head	Bok choy greens, chopped
2 – 4 cloves	Garlic, sliced or diced
4 tsp	Curry powder
1 tsp	Turmeric (<i>mainly for color</i>)
1 tsp	Salt (<i>or to taste</i>)
1/2 tsp	Cumin
1/2 tsp	Ground black pepper
4 tbsp	Grape seed oil

Directions

1. Start the rice. I use jasmine or basmati rice in a rice cooker, but that isn't part of the rules.
2. Fry garlic in 1 tbsp grape seed oil in a large pan over medium heat, about 5 min. I like to see a color change to a light brown. Empty into a large bowl.
3. Fry garbanzo beans with all the seasonings (curry powder, turmeric, salt, cumin, black pepper) over medium-high heat in 2 tbsp grape seed oil. Use the same pan, unless you like to wash dishes. About 8-10 min. Add to large bowl. Mix with garlic.

4. Sautee that big mound of chopped bok choy greens in your large pan with 1 tbsp grape seed oil over medium-high heat, approximately 8 min. It should cook way down. Don't worry, a few bok choy stalk pieces will not harm the recipe. Add to large bowl, mix with garlic and garbanzo beans.
5. Your rice should be finishing up around now. Add to large bowl and mix thoroughly.



Did you know...

There is evidence that the main isoflavin (phytoestrogen) found in chickpeas, Formononetin, has anticancer potential against 11 different type of cancer cells *in vitro and in vivo*.

(Tay et al, 2019, Front. Pharmacol.)



“Vegetarian eating may be healthy and responsible, but I’ve never found a rice and bean recipe I could happily eat until I invented one. I have made it as a side dish, a snack, or a meal. Also, I have found the recipe tolerant to errors, substitutions and changes in proportion or seasoning. For instance, some people might want to add some cayenne pepper or hot curry, use more rice, or substitute spinach or mustard greens for bok choy.”

James Schuyler

General Tso's Chicken

Country of Origin: China

Yield: 1 serving

Prep time: 10 minutes

Total time: 20 minutes



Ingredients

90 g	Chicken leg meat (no skin, no bone)
5 g	Green onion
1 clove	Garlic
Some	Dried hot pepper
Some	Salt
Some	Vegetable oil
10 g	Sugar
5 g	Hot pepper oil
Some	Cilantro
5 g	Ginger
1	Yolk
Some	Corn starch
10 g	Soy sauce
15 g	Vinegar
20 g	H ₂ O

Directions

1. Cut chicken into 1-in size cubes.
2. Add chicken, salt, and corn starch into yolk, mix well.
3. Dice the green onion, cilantro, garlic, ginger, and break the dried hot pepper into flakes.
4. Heat up the vegetable oil and sauté the chicken until it turns golden brown.
5. Add soy sauce, sugar, vinegar, hot pepper oil, and a little corn starch into cold H₂O, mix well.
6. Pour mixture into chicken and sauté until all the chicken are evenly coated.



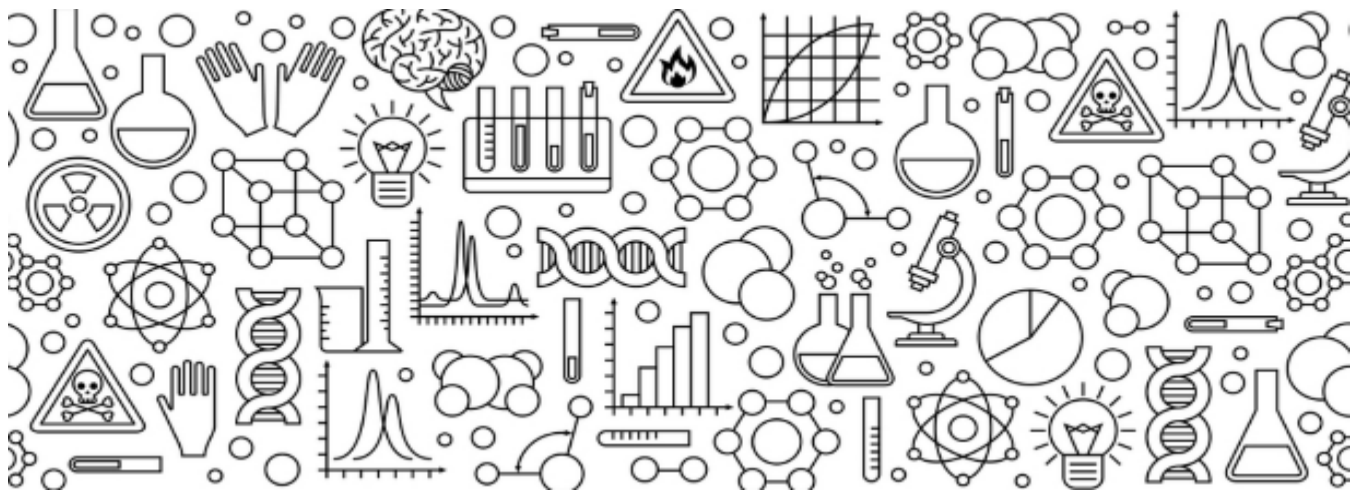
Did you know...

A large population-based prospective study has associated the consumption of hot red chili pepper with reduced mortality.

(Chopan et al, 2017, PLOS ONE)



Vivian Yee



Shopska Salad

Country of Origin: Bulgaria

Yield: 4 servings

Prep time: 5 minutes

Total time: 5 minutes



Ingredients

1	Cucumber
2	Green peppers / Bell peppers
1	Onion (yellow or red)
3	Tomatoes
1/2	Bunch of parsley
300 g	White cheese (or Greek Feta)
Some	Black olives

Dressing:

3 tbsp	Olive oil
To taste	Salt

Directions

1. Peel the cucumber and cut into slices.
2. Chop the tomatoes into medium-sized pieces.
3. Cut the pepper into circles.
4. Peel the onion, cut in half and cut into slices.
5. Put together the tomatoes, cucumber, pepper and onion into a salad bowl.
6. Grate the cheese on top of the vegetables, add parsley and some black olives on top.
7. Season with olive oil and salt to taste.



Did you know...

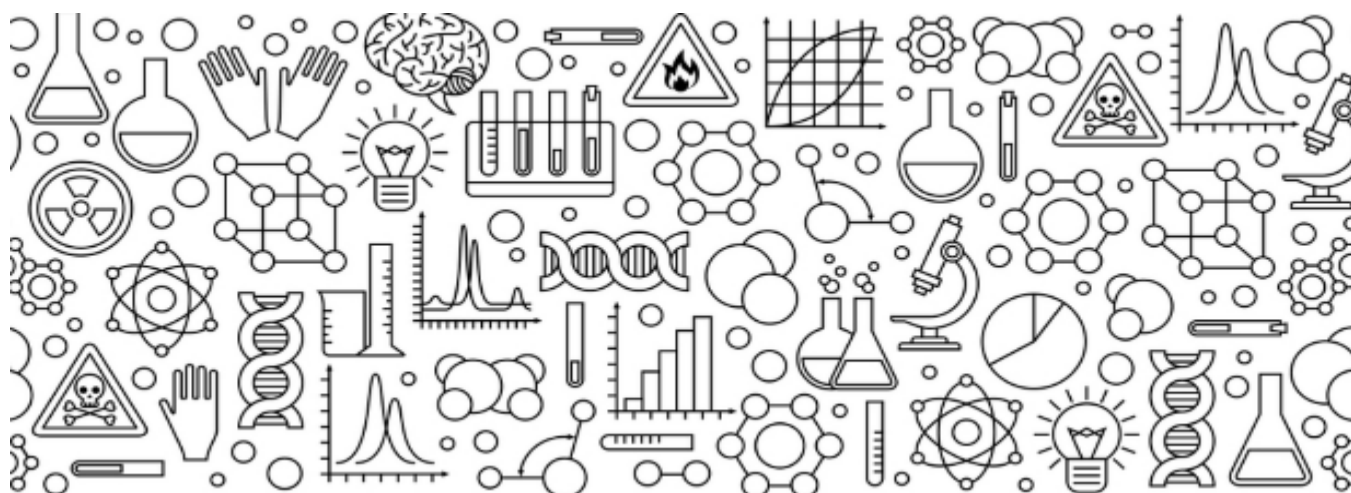
Recently the microbiota of cv. Kalamata black olives was characterized.

(Kazou et al, 2020, *Microorganism*)



“Shopska salad is a traditional cold salad popular throughout the Balkans. It is one of the most recognizable Bulgarian dishes and is appreciated both by locals and tourists visiting the region.”

Alexander Simeonov





Sweet Recipes

Gulab Jamun

Country of Origin: [India](#)

Yield: 12-14

Prep time: 20 minutes

Total time: 1.5 hours



Ingredients

1 c	Milk powder
4-5 tbsp	All-purpose flour
1 tsp	Vegetable oil
1 pinch	Baking powder (sodium bicarbonate)
2-3 tbsp	Milk
1 ½ c	H ₂ O
1 ½ c	Sugar

Directions

1. Add the milk powder, flour, baking powder, vegetable oil, and milk to a mixing bowl, and gently mix (do not knead) until a soft, smooth dough is formed. If the dough is too dry, add a little bit more milk.
2. Grease your hands with oil to prevent the dough from sticking. Next, divide the dough into 12-14 portions and gently roll them into smooth balls without cracks. Set these balls aside for later.
3. Add 1 1/2 c H₂O and 1 1/2 c sugar to a pot and bring the syrup to a boil for about 5 min. Make sure to boil the sugar syrup until it turns slightly sticky. Switch off the stove and keep the sugar syrup warm for later.
4. Add cooking oil to a pan and heat the pan on the stove to medium heat.
5. Once the oil has reached the correct temperature, add the balls to the hot oil and deep fry them for about 1-2 min, or until the balls turn golden brown in color.
6. Remove the balls from the oil and drain them using a deep fry strainer to get rid of the excess oil.
7. Allow the balls to briefly cool for around a min, and then place them into the hot sugar syrup. Allow the balls to soak in the syrup for at

least 30 min, so that the balls will absorb and take in the sugar syrup.

8. Enjoy!



Did you know...

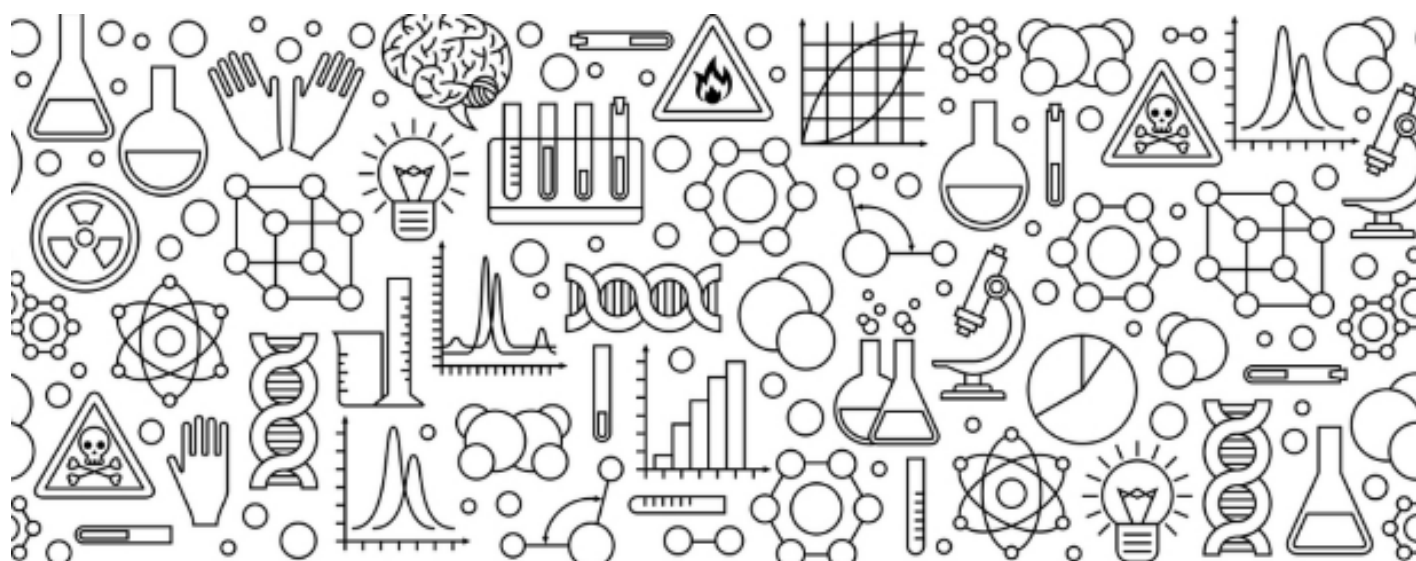
The heating and cooling processes of irregularly shaped food is particularly challenging. Using spherical approximation for irregular geometries may help in developing better heating and cooling processes.

(Uyar et al, 2012, Journal of Food Science)



“An Indian dessert made with fried balls made of milk powder and flour soaked in sugar syrup.”

Rac Mukkamala



Carrot Cake

Country of Origin: USA

Yield: 1 loaf (15 slices)

Prep time: 45 minutes

Total time: 1.5 hours



Ingredients

75 g	Caster/Brown Sugar
175 mL	Sunflower oil
140 g	3 medium grated carrots
100 g	Raisins
Zest	1 large orange
3	Large eggs
175 g	Flour
1 tsp	Baking powder
2 tsp	Ground cinnamon
1 tsp	Ground nutmeg
100 g	Walnuts

Directions

1. Heat the oven to 180°C.
2. Line the base and sides of a loaf-sized baking tin with baking parchment.
3. Lightly mix the sugar, sunflower oil and eggs in a big mixing bowl with a wooden spoon. Stir in the carrots, raisins and orange zest.
4. Crumble the walnuts and add them to the mix. Reserve a couple of halves to add on top of the cake.
5. Sift the flour, baking powder, cinnamon and nutmeg into the bowl. Mix everything together, the mixture will be soft and almost runny.
6. Pour the mixture into the prepared tin and bake for 40-45 min or until it feels firm and springy when you press it in the center.
7. At the 10 min mark, lay out the walnut halves in a line on top of the cake.
8. Cool in the tin for 5 min, then turn it out, peel off the paper and cool on a wire rack.



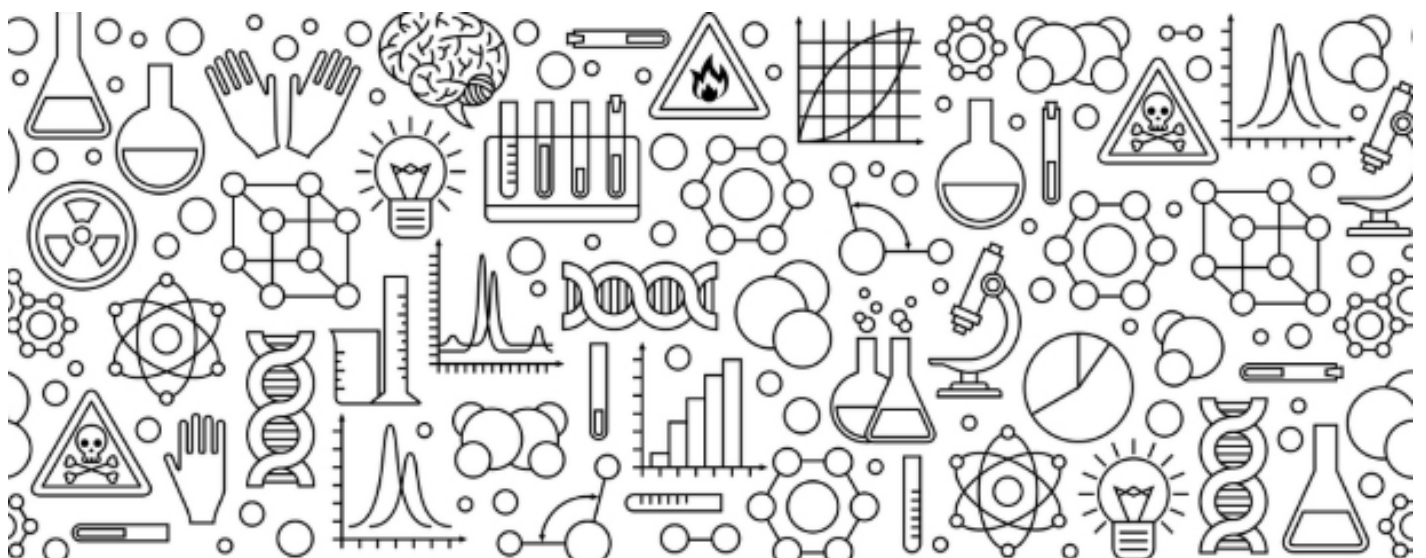
Did you know...

Sonication is the agitation of particles using sound. Sonication of carrots increases carotenoid production along with other nutrients.

(Jabbar et al, 2014, LWT – Food, Science & Tech)



Victor Kolev



Lemon Cake

Country of Origin: USA

Yield: 1 loaf

Prep time: 30 minutes

Total time: 1.5 hours



Ingredients

Cake:

250 g	Butter
200 g	Sugar
200 g	Flour
50 g	Cornstarch
1 1/2 tsp	Baking powder
4	Eggs
1 lemon	Zest
1 1/2 lemons	Juice
Pinch	Salt

Glaze

150 g	Powdered sugar
4 tbsp	Lemon juice

Directions

1. Whip butter, sugar, 2/3 of the lemon juice, and zest of the hesperidium's exocarp with a hand mixer until smooth and fluffy.
2. Combine flour, cornstarch, baking powder, and starch in a separate bowl and whisk together.
3. To the butter mixture, add one egg and 1/4 of the dry ingredients and lightly mix. Repeat 4 times until everything is combined and the batter is smooth. Be sure to avoid overmixing.
4. Line loaf pan with parchment paper and add batter.
5. Bake at 375°F for 50 min.
6. Mix the powdered sugar and 4 tbsp of lemon juice to make a glossy glaze. Adjust sugar as necessary, glaze should be thick.
7. Once the cake is cooled, use a toothpick and poke holes over the top, about halfway into the depth of the cake. Spoon the remaining

1/3 lemon juice over it and allow to drain into the holes to moisten the cake.

8. Evenly pour the glaze over the top of the cake and allow to harden. Enjoy!



Did you know...

Extracts of lemon were shown to be effective antimicrobial against microorganisms that cause urinary tract infections including the bacterial pathogen *Pseudomonas aeruginosa* and other.

(Liya et al, 2018, Euro Journal of Microbiology & Immunology)



Willow Huang

Irene's Veg-Friendly Chocolate Carrot Cake

Country of Origin: [USA](#)

Yield: 1 loaf

Prep time: 20 minutes

Total time: 1 hour



Ingredients

1 tbsp	Softened butter, for the pan
1 1/3 c	Flour
3/4 tsp	Baking powder
1/2 tsp	Baking soda
1/2 tsp	Salt
1 tbsp	Cocoa powder
1 tsp	Cinnamon
1 c	Sugar
1/2 c plus 2 tbsp	Safflower oil
2	Bananas (mashed)
1 tsp	Vanilla extract
1 1/2 c	Shredded carrots (approx. 7 medium)

Directions

1. Preheat the oven to 350°F. Butter a 9-inch round cake pan with removable sides. Cut out a circle of parchment and place it in the bottom. Butter that too.
2. In a medium bowl, combine the flour, baking powder, baking soda, salt, cocoa powder, and cinnamon.
3. In a large bowl, beat together the sugar, oil, bananas, and vanilla until everything's completely incorporated, using a spatula—no need for the electric mixer.
4. Pour the dry ingredients over the wet and fold together until just combined.
5. Fold in the carrots.

6. Pour into the prepared pan and cook for 35 to 40 min, until the cake is pulling away from the sides and a toothpick inserted in the middle comes out clean.
7. Let the cake cool on a rack in the pan for about 10 min, then loosen the cake from the pan and invert the whole rack onto a plate. Remove the bottom part of the pan and peel off the parchment, then invert the cake back onto the rack and let it cool completely.



Did you know...

Carrots produce β -Carotene which is good source of Vitamin A.

(Grune et al, 2010, The Journal of Nutrition)



Raga Ramachandran

No Bake Chocolate Oatmeal Cookies

Country of Origin: USA

Yield: 30 cookies

Prep time: 20 minutes

Total time: 1 hour



Ingredients

1/2 c	Butter (1 stick)
1/2 c	Cashew milk (or milk)
1 c	Brown sugar packed
1/2 c	Granulated sugar
1/4 c	Date syrup (if no date syrup then just use 1 c granulated sugar but will be a little less creamy)
1/3 c	Unsweetened cocoa powder
1/4 tsp	Salt
2/3 c	Cashew butter (or peanut butter)
2 c	Quick oats
1 c	Old fashioned oats (if you don't have one or the other that's okay — just 3 c total)
1-2 tsp	Vanilla

Directions

1. Melt stick of butter in saucepan over medium high heat.
2. Add 1/2 c of cashew milk, 1 c brown sugar, 1/2 c of granulated sugar, 1/4 c date syrup and 1/3 c cocoa powder. Stir well until all combined over the heat.
3. Stop stirring and let mixture come to a rolling boil—this means across the whole surface, not just the edges. Once boiling, set a timer for 1 minute.
4. Remove from heat and add 1/4 tsp of salt, 1 1/2 tsp of vanilla, 2/3 c cashew butter, 2 c quick oats, 1 c old fashioned oats. Stir it all together.

5. Line a baking sheet with parchment paper or a silicone mat. Use a cookie scoop or a spoon to drop them on.
6. Let cool at room temp for 30-60 min or you can put them in the fridge to cool faster.



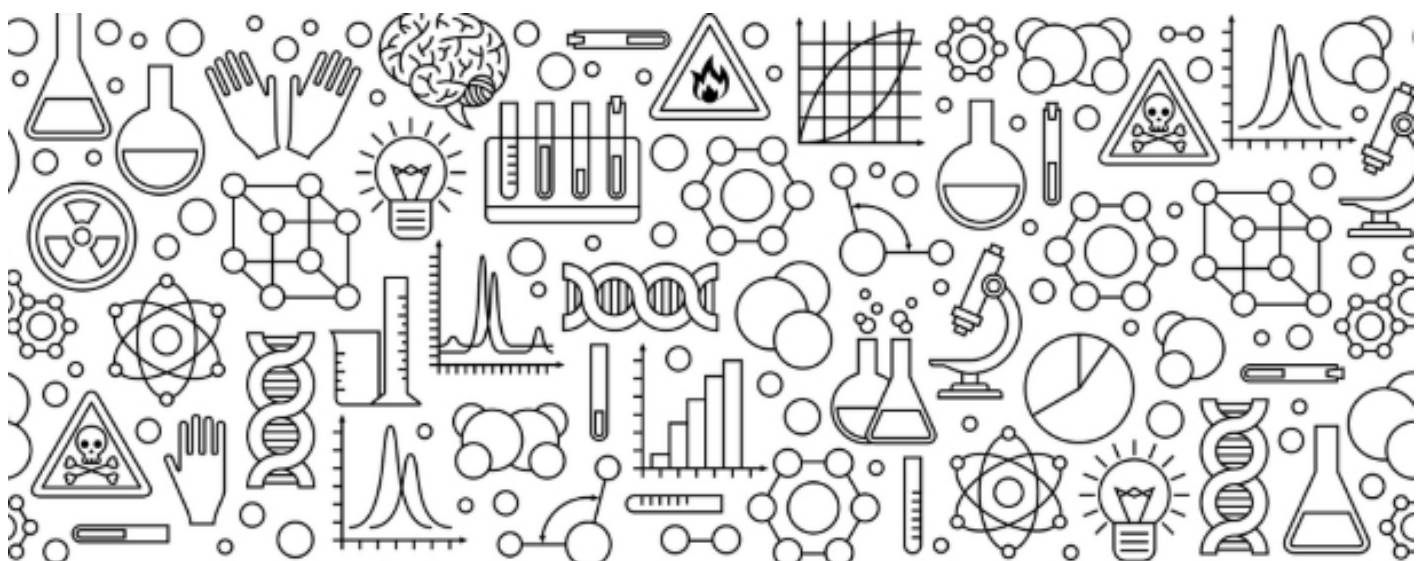
Did you know...

Cinnamon has been shown to inhibit α -amylase, enzymes used to break down dietary sugar. This result shows cinnamon could be used for management of blood glucose.

(Okutan et al, 2014, J. Agric. Food Chem.)



Dagny Atencio Loper



Balkan Baklava

Country of Origin: Bulgaria

Yield: 4 servings

Prep time: 30 minutes

Total time: 1.5 hours



Ingredients

For filling:

4	Eggs
1 c	Sugar
1 c	Flour
1 tsp	Baking powder
1/2 tsp	Vanilla extract
300 g	Crushed walnuts

Additional ingredients:

Some	Butter
Some	Oil
2 c	H ₂ O
2 c	Sugar
Sliced	Lemon
1 pkg.	Phyllo dough

Directions

1. Mix eggs, sugar, flour, baking powder and vanilla into a cake batter. Leave to the side.
2. Melt butter with oil and grease a baking tray.
3. Using half of the phyllo dough, stack layers of phyllo sprinkling the melted fat between each layer.
4. Mix the cake batter with the crushed walnuts and pour over phyllo dough.
5. Stack the remaining phyllo dough on the cake batter, sprinkling the melted fat between each layer.
6. Cut diamonds into pie and bake at 350°F for until golden.
7. Remove and let rest for 24 hrs.

8. Heat H₂O, sugar, lemon and vanilla until sugar is melted and slightly thick.
9. Pour syrup over pie and let rest for 24 hrs.
10. The baklava is ready.



.....
Did you know...

Walnuts have been shown to slow the mental decline in high-risk subgroups. The full potential of walnuts is not fully understood.

(Sala-Vila et al, 2020, American Journal of Clinical Nutrition)



"I learned the recipe for the baklava dessert from a Bulgarian teacher who knows it from her great-grandmother from the Macedonian region as "Armenian baklava". My friends told me they knew it as "Greek baklava," and it was probably "Turkish." I suggest it be included as "Balkan baklava" - I tried it for Christmas and it was highly appreciated by the family (although we did not wait for 48 hours after the baking)"

Jenny Sendova

Christina's Pumpkin Bread

Country of Origin: USA

Yield: 1 loaf

Prep time: 20 minutes

Total time: 1 hour



Ingredients

3	Flour
1 ½ c	Sugar
½ tsp	Baking powder
1 tsp	Baking soda
¾ tsp	Salt
½ tsp	Cinnamon, nutmeg, allspice
each:	
¼ tsp	Cloves (<i>optional</i>)
1/3 c	H ₂ O
½ c	Oil
2	Eggs
8 oz.	Canned pumpkin

Directions

1. Preheat oven to 350°F. Grease and lightly flour one regular loaf pan.
2. Combine dry ingredients. Make a well in the flour mixture. Pour in 1/2 c oil. Add pumpkin, H₂O, and eggs. Mix together. Pour into prepared pan(s).
3. Bake on center oven rack until top is firm and toothpick inserted comes out dry. Bake approximately 35 min for muffins or 50 min for a loaf. When bread is cooled, remove from pan(s).



**Christina
Chang**



Did you know...

- Novel protein, Pr-2 that was identified in pumpkin rinds inhibited the growth of multiple fungal pathogens.

(Park et al, 2009, J. Agric. Food Chem)

The World's Best Cheese Cake:



An Original Secret Recipe

Country of Origin: USA

Yield: Serves 16

Prep time: 30 minutes

Total time: 2 hours

Ingredients

For crust:

1 1/4 c	Graham cracker crumbs
1/4 c	Sugar
5 tbsp	Butter or margarine, melted

For filling:

1 1/4 c	Instant nonfat powdered milk
1/2 c	Sugar
1/3 c	Boiling H ₂ O
3 tbsp	Butter or margarine
1/3 c	Lemon juice
8 oz pkg	Cream cheese, room temperature

Directions

For crust:

1. Mix crust ingredients in pan and press firmly with a fork, measuring c or turner.
2. Chill 30 min or longer until set.

For filling:

3. Mix everything, except cream cheese, in a blender.
4. Add cream cheese & mix thoroughly.

5. Pour into chilled crust.
6. Chill until set.

Recipe Notes

Optional Ingredients:

- Add can of cherry or blueberry filling & smoother over top. Other fruits may be used.
- Fold one chopped peach into filling & top with 1 sliced peach.

Substitutions:

- Powdered milk, sugar, H₂O and butter can be substituted with 1 can of sweetened condensed milk.
- Lemon juice can be substituted with lime.

Calories (calculated during RSI '92)

- 3470 total Calories
- 217 Calories per serving



Did you know...

It is proposed that Fatty Acids stimulate oral nutrient sensors. Fatty Acid hypersensitivity coincides with reduced Fatty Acid intake and body weight.

(Stewart et al, 2010, British Journal Nutrition)



“A 1992 Summer recipe, I actually managed to prepare during RSI.”

Colleen Johnson

Research Lab Party

Tips & Ideas for hosting in your research lab

Ambiance & Décor

- Stacked Eppendorf tube racks make great colorful accent pieces.
- Practice cable organization skills by designing a centerpiece in a variety of cable colors. Alternatively, consider setting up a live stream of your server room for all guests to enjoy.
- Feeling extra groovy, make a Lava Lamp with a stir plate, oil, H₂O, food coloring, and 2 L graduated. Really make it shine, by adding lighting from behind or underneath.
- Need something to jazz up boring walls or cover unorganized lab shelves? No problem! Use lab gloves to make festive balloons. Make it extra festive by using different colored gloves.
- No need to pay for expensive floral centerpieces, simply collect plant cuttings from landscaping near your lab. Put the cuttings in round bottom flasks suspended from a ring stand. Larger plant clipping can be used to hide ugly clamps or rusty ring stands.

Food & Drink

- Using a catering is strongly recommended as it frees up the host to entertain guests and ensures guests don't get food poisoning. Hot plates, Bunsen burners, and incubators can be used to keep food warm.
- Short on food?
 - Use an autoclave to cook or re-heat food., To cook food in an autoclave, use the lowest settings and half the cooking time of Instapot recipes. Warning: This is very roughly estimated and possibly not to be trusted
 - Other ideas: Lab Rat-tat-touille, Petri dish surprise, Leftover maze cheese fondue, or get creative with your favorite Laboratory Animal Diet feed.
- If you plan to serve coffee, make sure you've cleaned your coffee maker recently. Alternatively, use a funnel and filter paper to make pour over coffee.
- Flasks and beakers make attractive cocktail glasses. Use stir bars/plates to mix cocktails or provide guests with glass stirring rods.
- Round bottom flasks are a good option for serving aperitifs (such as Aperol or Campari) and digestifs (such as Fernet Branca or Averna). Just make sure you have enough holders for guests.
- Watch glasses and evaporating dishes make nice appetizer/tapas plates.
- Petridishes are your best friend. Due to the variety in sizes they can be used for everything from dipping cs, coasters, to tapas plates. The possibilities are endless!

Entertainment

When it comes STEM fun the choices for party entertainment are endless. Here are just a few ideas to spice up any lab party:

- Show fun chemistry experiments:
 - Gummy Bear (sugar) and Potassium chloride reaction
 - Belousov-Zhabotinsky reaction
 - Briggs-Rauscher reaction
 - Luminol makes for both interesting chemistry entertainment and lighting options.
- Play games:
 - If there plans to play poker, consider your guest list and disinviting mathematicians and statisticians.
 - Have a guest write code of the groups choice and offer an over/under on whether the code will work without revision.
 - Set-up an antenna and have guests guess which frequency will picked up first. Play using Price is Right rules (closest guess without going over wins).
- Play hangman, Pictionary or charades using IUPAC names, binomial nomenclature, common code lines or physics equations.

Special Touches

- Clean your chalkboard, whiteboard, or smartboard to provide guests with space for research ideas and recommendations.
- For more formal party, use exothermic reaction of potassium and H₂O to signal the end of each course.
- End the party with bang by demonstrating a thermite reaction.

CEE does not endorse anyone hosting a party in a research lab. Please ensure you follow all regulations regarding lab safety, hazardous materials, and appropriate use of laboratory equipment your lab is required to follow.

Ingredient	Amount	Equivalent
Butter	1 stick	1/2 c or 110 g
Cheese, grated	2 oz	1/2 c
Cheese, grated	1 lb	4 to 5 c
Chocolate, semisweet	6 oz. pkg	1 c
Corn	12 ears	2 1/2 c cooked
Corn	12 ears	2 1/2 c cooked
Cream, heavy (36% to 40% fat)	1 c	2 to 2 1/2 c whipped
Egg (medium)	1	3 tbsp; 1 yolk
Egg white	1	2 tbsp
Egg yolk	1	1 tbsp
Eggs	1 c	8 - 10 eggs
Flour	1 lb	3 1/2 c
Lime	1 medium	1 1/2 to 2 tbsp juice
Orange	1 orange	2 tbsp rind and 1/2 c juice
Sugar	1 lb	2 1/4 c
Buttermilk (sour milk)	1 c	1 c plain yogurt
Coconut cream	1 c	1 c whipping cream
Coconut milk	1 c	1 c whole or 2% milk
Cream, heavy (36% to 40% fat)	1 c	3/4 c milk and 1/3 c butter or margarine
Cream, light (18% to 20% fat)	1 c	3/4 c milk and 3 tbsp butter or margarine
Cream, light (18% to 20% fat)	1 c	1 c evaporated milk, undiluted
Cream, whipped	1 c	Chill a 13 oz. can evaporated milk until ice crystals form. Add 1 tsp lemon juice. Whip until stiff.
Fruit, fresh, cut up	1 1/2 c	16 oz. can, drained
Lemon peel, dried	1 tsp	1 to 2 tsp grated fresh lemon peel
Lemon peel, dried	1 tsp	grated peel of 1 medium lemon
Lemon peel, dried	1 tsp	1/2 tsp lemon extract
Milk, skim	1 c	4 to 5 tbsp non-fat dry milk powder and enough H ₂ O to make 1 c or follow manufacturer's directions
Milk, skim	1 c	1/2 c evaporated milk and 1/2 c H ₂ O
Milk, whole	1 c	1/2 c evaporated milk and 1/2 c H ₂ O

Ingredient	Amount	Substitute
Breadcrumbs, dry	1/4 c	1/2 c fresh
Cornstarch (for thickening)	1 tbsp	2 tbsp all-purpose flour
Cornstarch (for thickening)	1 tbsp	2 tbsp granular tapioca
Cracker crumbs	3/4 c	1 c dry breadcrumbs
Flour, all-purpose (for thickening)	1 tbsp	1 1/2 tsp cornstarch, arrowroot starch, potato starch, or rice starch
Garlic	1 clove	1/8 tsp garlic powder
Herbs, fresh	1 tbsp	1 tsp dried
Ketchup	1 c	1 c tomato sauce, 1/4 c brown sugar, and 2 tbsp vinegar
Lemon juice	1 tsp juice	1/2 tsp vinegar
Allspice	1 tsp	1/2 tsp cinnamon and 1/2 tsp ground cloves
Baking powder	1 tsp	1/3 tsp baking soda and 1/2 tsp cream of tartar
Baking powder	1 tsp	1/4 tsp baking soda and 1/2 c sour milk or buttermilk (Decrease liquid called for in the recipe by 1/2 c.)
Baking powder	1 tsp	1/4 tsp baking soda and 1/2 tsp vinegar or lemon juice used with sweet milk to make 1/2 c (Decrease liquid called for in the recipe by 1/2 c.)
Butter	1 c	7/8 c lard plus 1/2 tsp salt
Buttermilk (sour milk)	1 c	1 c whole or skim milk plus 1 tbsp lemon juice or white vinegar
Chocolate, semisweet	1 2/3 oz.	1 oz. unsweetened chocolate plus 4 tsp sugar
Chocolate, unsweetened	1 oz. or square	3 tbsp cocoa plus 1 tbsp fat
Cocoa	1/4 c or 4 tbsp	1 oz (square) unsweetened chocolate (Decrease fat called for in the recipe by 1/2 tbsp)
Corn syrup	1 c	1 1/4 c light brown sugar and 1/3 c H ₂ O
Corn syrup	1 c	7/8 c honey (Baked goods will brown more.)
Corn syrup, dark	1 c	3/4 c light corn syrup and 1/4 c light molasses
Cornmeal, self-rising	1 c	7/8 c plain, 1 1/2 tsp baking powder, and 1/2 tsp salt
Flour, all-purpose	1 c sifted	1 c and 2 tbsp cake flour
Flour, cake	1 c sifted	1 c minus 2 tbsp sifted all-purpose flour (7/8 c)
Flour, self-rising	1 c	1 c minus 2 tsp all-purpose flour, 1 1/2 tsp baking powder, and 1/2 tsp salt
Honey	1 c	1 1/4 c sugar and 1/4 c H ₂ O
Lemon	1 tsp grated rind	1/2 tsp lemon extract
Milk, sweetened condensed	1 can (about 1 1/3 c)	Heat the following ingredients until sugar and butter are dissolved: 1/3 c plus 2 tbsp evaporated milk, 1 c sugar, and 3 tbsp butter or margarine.
Milk, sweetened condensed	1 can (about 1 1/3 c)	Add 1 c plus 2 tbsp dry milk to 1/2 c warm H ₂ O. Mix well. Add 3/4 c sugar and 3 tbsp melted butter or margarine. Stir until smooth.

Teaspoon tsp	Tablespoon tbsp	Cups c	Fluid Ounces oz	Milliliters mL	Imperial
1/16					Pinch
1/8					Dash
3	1	-	½	14.8	
6	2	1/8	1	29.6	
9	3	1/5	1 ½	44.4	
12	4	1/4	2	49.1	
	5	1/3	2 ½	73.9	
	8	1/2	4	118.3	
		3/4	6	177.4	
		1	8	236.6	
		2	16	473.2	1 pint
		3	24	709.8	-
		4	32	946.4	1 quart
		8	64	1892.7	2 quarts
		16	128	3785.5	1 gallon
°F	°C	°K	Freezer life span		Months
0	-18	255	Bacon, sausage		1 to 2
10	-12	261	Casseroles		2 to 3
20	-7	266	Egg whites, egg substitutes		12
30	-1	272	Ham, hotdogs, lunchmeat		1 to 2
40	4	278	Meat (uncooked roasts)		4 to 12
50	10	283	Meat (uncooked steaks, chops)		4 to 12
60	16	289	Meat (uncooked, ground)		3 to 4
70	21	294	Meat (cooked)		2 to 3
80	27	300	Poultry (uncooked whole)		12
90	32	305	Poultry (uncooked parts)		9
100	38	311	Poultry (cooked)		4
212	100	373	Soups, stews		4 to 6
250	121	394	Wild game (uncooked)		8 to 12
275	135	408			
284	140	413			
300	149	422			
325	163	436			
350	177	450			
356	180	453			
375	191	464			
392	200	473			
400	204	478			

Temperature Conversion Equations

$$(^{\circ}\text{F} - 32) \times 5/9 = ^{\circ}\text{C}$$

$$^{\circ}\text{C} + 273.15 = ^{\circ}\text{K}$$

