Dry low-moisture herbs like oregano, rosemary, sage, and dill by hanging them upside down in a dark, dry place until the leaves are brittle and crumble when pinched, several days to several weeks.

be impossible. If you're lucky enough to have access to a centrifuge, start by spinning tomato juice; the shock of seeing water but tasting and smelling tomato is an unforgettable experience. Check out http://cookingforgeeks.com/book/centrifuge/ to see more.

Drying

You might not think of drying as a separation, but it is: water is separated via evaporation or sublimation when foods are dehydrated. Natural air drying of foods is perhaps the oldest preservation method, and it's a simple method for transforming foods into shelf-stable versions that won't spoil or go moldy. Even with modern refrigeration, we still dry foods this way for desirable changes to their texture, creating firm dried fruits, chewy beef jerky, and crispy kale chips.

If you're lucky enough to live in a warm, arid region, any place where the summertime sunshine pushes the needle above 85°F / 30°C and keeps the humidity well below 60% (*ah*, California), drying fruit is an easy task. Pick fully ripened fruits, wash and clean them, cut stone fruits in half (removing any pit) and other fruits in slices (peppers and tomatoes, both biologically fruits!), and soak them for 10–15 minutes in lemon juice (or a ~4% solution of vitamin C). Pat the fruits dry, lay them out on a sheet of cheesecloth on top of an oven rack, and dry them during the day for a week or so (bring them indoors at night). If you think your fruit has any insects or insect eggs, freeze the dried fruit (below 0°F / –18°C) for two days or cook it at 160°F / 70°C for half an hour.

Why bother? Well, besides handling an influx of 20 pounds of apricots in a week (I grew up with an apricot tree in the backyard), creating your own dried foods can give you access to ingredients that far surpass what you can buy or that don't even exist commercially. Store-bought paprika, even from good spice sellers, simply cannot compete with what you can make at home. Snag some peppers for making paprika, optionally smoke them if you like smoked paprika (it's great with chicken; see page 28), and dry them. Once they're dried, toss them into a blender to pulverize them. (If you have a green thumb, look for NuMex R Naky or Paprika Supreme seeds.)

Freeze-drying is also a dehydration process and works via *sublimation*—ice evaporating straight to vapor. While it has little impact on shape, flavors, or nutritional values, it's expensive to do, so it's generally used only in cases where water weight is an issue, like backpacking and space travel.

If you don't live in an arid climate—or it's not summertime—look into getting a food dehydrator. These are essentially boxes with a fan and a heater that speed up evaporation by maintaining air temperature and blowing aside water vapor. The heater isn't for cooking so much as for maintaining temperature. Water, as it evaporates, will drop the food's surface temperature, leading to a slower rate of evaporation;

the heater fixes that issue and gives a slight bump in temperature to speed up evaporation. Toss in a bunch of sliced apricots or tomatoes and wait a few hours, and presto, they're dried. (Dip those apricots in melted dark chocolate, by the way. You're welcome.)

Food dehydrators can be put to other uses as well. Beef jerky, made the old-fashioned way, can spoil or have food safety issues when dried too slowly. A dehydrator fixes that. You can make other jerkies, too: salmon, deboned and sliced ¼" / ½ cm thick and dried for 3–6 hours turns out delicious. Or make your own fruit leathers (thin sheets of chewy dried fruit): purée fruit mixed with a teaspoon of lemon juice per cup of fruit and optionally add sugar to taste, smear the purée on a silicone sheet, and dry it. DIY Fruit Roll-Ups!

While water boils at 212°F / 100°C, it evaporates based on vapor pressure at lower temperatures, assuming the relative humidity is below 100%. You don't have to heat foods to evaporate their water, although increasing the temperature will increase the rate of evaporation due to changes in vapor pressure.

Crispy Oven Kale Chips

I'm shocked how much some stores charge for a few ounces of kale chips. Once you see how easy they are to make—no special hardware needed—you may want to start selling them yourself with crazy markups!

Kale has become something of a poster-child ingredient over the past few years, but it's not going away, just like how beets, another "suddenly popular" ingredient a few decades ago, are still popular. Kale is here to stay. Slow, long heat is the secret to great kale chips.

Preheat the oven to 300°F / 150°C; much hotter than this, and your kale chips can burn.

Rinse and pat dry **1 pound (~500g) of kale leaves**, using any variety you like (I prefer Tuscan kale). Rip the stems out by folding each leaf in half along the stem, pinching it, and then starting at the bottom of the leaf, tearing the stem out about two-thirds the way up the leaf. If you like smaller kale chips, tear the leaves into quarters, but it's easier to do that after they're cooked.

In a bowl, toss the leaves with **2 tablespoons (30 mL) of olive oil** or **coconut oil** and **½ teaspoon (2g) of sea salt**. Feel free to add **freshly ground black pepper**, **cayenne pepper**, **Parmesan cheese**—anything that's dry and will bake well. Using your fingers, rub the oil and seasoning over the leaves, spreading it out.

Lay the kale leaves out on a cookie sheet lined with parchment paper and bake them for about 20 minutes, until crispy.

Note

- *The two most common mistakes I see are baking them too hot (the kale will toast and taste cooked, possibly burned) and not baking them long enough (you'll know if your kale chips are chewy). Evaporation, like almost everything else in cooking, has a time-at-temperature "rate of reaction": warmer temperatures increase the amount of water vapor that can be held in air, and circulating that water vapor away to replace it with drier air will speed up the rate of evaporation.*

5^3 Beef Jerky

With just 5 ingredients that take 5 minutes to mix and 5 hours to cook (five-five-five, get it?), there's no excuse for beef jerky lovers to not make their own: it'll taste better than packaged stuff, plus you can season it exactly the way you like.

Beef jerky is shockingly easy to make; it's probably one of the first things humans ever "cooked." Slice up a good piece of meat, marinate it to add flavor, and dry it out. By sufficiently reducing the moisture content, dehydration makes the meat too dry to support bacterial growth. Of course, it tastes fantastic as well, which is why jerky is still popular today, even with refrigeration.

Fatty cuts of meat will lead to chewier jerky. Leaner cuts of meat left to dry longer will come out drier; too long, and it'll be crispy.

Snag the following five ingredients:

1–2 pounds (~0.5–1 kg) of high-quality beef (use either top round or sirloin cuts; once you've tried those, try an eye of round steak if you think you'd like slightly fattier jerky)—finished weight will be about a quarter of your starting weight

½ cup (120 mL) soy sauce

1 teaspoon (5 mL) sriracha sauce, cayenne pepper, or hot chili powder (optional, but gives a nice kick)

1 teaspoon (2g) freshly ground pepper

4 tablespoons (50g) brown sugar

Mix the marinade ingredients in a bowl. The marinade adds flavor; feel free to add or remove ingredients. Try adding Worcestershire sauce, natural liquid smoke (see page 403), or your favorite hot sauce—or any other flavors you like!

Slice the beef into thin strips using a sharp knife. If you're having difficulty keeping the meat steady while slicing, pop it in the freezer for an hour to firm it up.

Toss the sliced meat in the marinade. While it's not necessary to let the meat rest in the marinade, you certainly can do so. Coating the meat with the marinade and proceeding straight to the drying stage will work just fine and save plenty of time, but if you like, stash the covered meat in the fridge for an hour or two.

If you have a food dehydrator, preheat it to ~150°F / 65°C for half an hour. (Check the unit's temperature using a digital probe thermometer; sometimes the units aren't that accurate!) Lay the strips of meat onto the trays and pop them into the unit, checking back 5 hours later. If your dehydrator doesn't pull in fresh air or poorly circulates air, a drying time of 24 hours isn't unreasonable.

If you don't have a food dehydrator, line a baking sheet or tray with foil and place a cookie cooling rack on top. Lay out the strips of meat on the rack. Set your oven as low as it goes: ideally around 150°F / 65°C and no lower than 145°F / 63°C. (Too hot, and the meat will crust over and not dry.) Place your tray in the oven, leaving the door cracked open to allow moisture from the jerky to escape the oven and to keep the oven slightly cooler than it's set.

Five hours later, you should be looking at your first batch of jerky.

Before calling it done, though, you should do one more step: handle some safety issues. Researchers have found that *E. coli* can survive temperatures of 145°F for 10 hours in these sorts of drying conditions, presumably due to evaporative cooling. Our ancestors didn't deal with this stuff; they'd just get an occasional bad piece and get ill (or worse). There are two food safety issues you should consider, though:

- **Precontamination**: If your meat has *Salmonella* or *E. coli* along for the ride, it is easily handled by a quick low-temperature heating: pop that jerky in an oven at 275°F / 135°C for 10 minutes. (Traditionalists might abhor this, but it'll make only subtle changes to the texture.) Alternatively, see page 174 for a pretreatment hot-water-dip method, but the recommendation is still to post-treat the jerky.
- **Shelf stability**: Okay, this has never been an issue for me, but that's because I scarf down the jerky pretty much instantly. Still, you should check that you really did dry the meat sufficiently; otherwise, the water activity will be too high (see page 175). Check that your jerky is sufficiently dried by weighing it: dried jerky should weigh about a fourth of the starting weight. Keeping it dry after making it is also important. If you live in a humid environment, the jerky will pull moisture back in. Store it in an airtight container.