FIERY FERMENTS
PART 1
GETTING STARTED
ALL OF THE RECIPES IN THIS BOOK ARE FERMENTED. But what is fermentation exactly? Just a few years ago it was a dirty word, as in scary and weird. Chocolatiers and cheesemakers (who create some of sexiest fermented foods) did not talk openly about how the flavor and texture that made their products delicious was a direct result of the action of bacteria. Yikes! But that is so yesterday. In the last few years, working with bacteria to produce delicious fermented foods has become cool, something to be proud of.

The Flavor Makers

Fermentation is defined as the chemical breakdown of a substance by bacteria, yeasts, or other microorganisms, often resulting in effervescence and a giving off of heat. In lactic acid vegetable fermentation, it is the members of the lactic acid family of bacteria that transform the (often) low-acid vegetables into high-acid vegetables — a.k.a. pickled vegetables — by consuming the carbohydrates and converting them to acid. Like the before-and-after shots of a makeover, there are some significant, almost magical changes that make these veggies into a long-lasting “superfood.” Why “super”? (After all, “superfood” is an extremely overused word usually used to describe the next trendy green or berry.) Super, in short, because these veggies, after fermenting, have more vitamins that are more bioavailable because the carbs have been pre-digested by probiotic bacteria. But if that isn’t enough — and it isn’t, really — they just taste mighty good.

In fermentation, most of the taste comes from the action of these microbes who act like billions of little chefs layering on flavor. These lactic acid bacteria (LAB) comprise a whole assortment of different species that occur naturally in the environment. So whether you buy vegetables from the store or harvest them from your garden, they come to you fully inoculated with the bacteria needed to get things started. You just provide the environment (which we’ll get into later).

We are learning so much about the microorganisms that flavor our food and keep us healthy, but right now, broadly speaking, we know that four key species of LAB organisms are present in vegetable fermentations: Leuconostoc mesenteroides, Lactobacillus brevis, Pediococcus pentosaceus, and Lactobacillus plantarum. Several more species of LAB have been found in cabbage-based fermentations. Each of these groups have their own specific niches and reactions and, we are finding out, flavors. You will hear most about L. plantarum, as it produces high acidity in all vegetable
ferments. But honestly, you don’t need to know or remember any of these guys’ names to make great spicy ferments. You just need to know how to manage their homeplace, and they will do the rest.

People come to fermentation for a number of reasons. For some it is for the age-old reason of preserving the harvest into the cold, lean months. The acidification (or pickling, if you will) of vegetables—including peppers, the star of many of the recipes in this book—can hold off the forces of decay for months and sometimes years. But many more people come to fermentation for the health benefits (or to freak out their parents by eating foods with funk). And this is also a really good reason to make and eat fermented condiments — but ultimately it is flavor that will keep you coming back for more.

So here we are at the core of why we ferment: flavor. It has to be flavor because, ultimately, if you don’t like these ferments you won’t eat them, and then it really doesn’t matter how long they last, or how digestible and full of vitamins, minerals, and probiotics they are. We hope to introduce you to some flavors that we find fantastic while encouraging you to invent your own.

It is an exciting time right now as we reinvent our fermentation foodways. Chefs and home cooks are experimenting with using microbes for flavors in ways previously unimaginable. Many feel we are just scratching the surface of possibility. And this possibility lies not only in the fermenting itself but also in how we use these foods as not only condiments but ingredients in interesting meals. One of the things that we have enjoyed most since our book Fermented Vegetables came out has been meeting both home cooks and chefs who are bringing these ferments to their dinner tables and menus in intriguing ways.

We invite you to enjoy all of the advantages of fermentation, from flavor to health to preservation. And remember that buying chiles from your local farmers means you are supporting local foodsheds too, and playing a small part in taking back your region’s food security.

You Got This!

Don’t be daunted by fermentation. The worst that can happen is that you have a failed batch — really, that is the worst. You won’t kill your family (cliché alert), but if we had a nickel for every time somebody comes to us and says, “I want to do this, but I am afraid I will kill my family,” we would be quite wealthy. After all, for a society that has grown up with germ theory and refrigeration, there is nothing intuitive about sticking something on your counter for a few days or weeks, possibly growing a layer of yeast or mold on top that you will remove before digging your fork in, and then putting it in your mouth.

Fermentation advocate and USDA microbiologist Fred Breidt is often quoted as saying that, as far as he knows, nobody has died from eating properly fermented vegetables — the operative word being properly, because this is where things can go south. The good news
is that if they do, you will know. We like to remind people that our species is still around after thousands of years because we have five very capable senses. Okay, so you may not hear it go bad, but you will smell it. Your nose will be the first to tell you this thing you have created is no good. The smell is not strange or pickle-y pungent, but bad — like something rotting, which is essentially what is happening at that point. Your eyes will see things that are off-color or otherwise unappealing. (The caveat is that sometimes the top layer, the part that was exposed to oxygen, might look off-color — but you will remove that layer and find wonderful flavors underneath where the ferment is far too acidic for pathogens to live.) It may feel soft or slimy. Your survival brain will kick in and tell you, do not put that in your mouth. And if you do put it in your mouth and it feels and tastes wrong, it probably is: spit it out.

Now that you have the worst-case scenario out of the way, don't be afraid to fail. Take the risk! Enjoy the process, even if it means you may sometimes feed your compost pile instead of your family. What we are trying to say is, if you have an unsuccessful batch, don't beat yourself up about it. Even a failed batch is a wonderful opportunity to learn a little more about the process. We know, we hated to hear that when we were kids, and we still do. If it makes you feel any better, we couldn’t write these books without plenty of yuck to keep us learning so that we can help you avoid those moments.

“"With fermented products there is no safety concern. I can flat-out say that. The reason is the lactic acid bacteria that carry out the fermentation are the world’s best killers of other bacteria.”
Fermentation is that humble. We humans have been processing our vegetables this way for more than a few years — so long that in the beginning the only vessel we may have had was a clay pot or an animal skin pouch. In this chapter we will touch on the many ways to house and care for your ferment. We’ll also go over the key elements of lacto-fermentation — salt and unchlorinated water, brine and time — and how each affects our friends the in the lacto-bacillus family. With a few management strategies, you’ll find it an easy process, and your hot ferments will turn out delicious.

The Perfect Vessel

In the last few years, folks have come up with ingenious ways to manage the process of fermentation, not to mention stunning pieces of functional art. So what you need is more of a question of what will make this process enjoyable and successful for you. For some, that means having a crock that is a piece of art gracing their counter; for others it means a hermetically sealed jar that discourages alien invaders in the form of yeasts or molds. The beauty is that with the wide range of possibilities available, you will surely find a fermentation vessel that works for you — your environment, your lifestyle, and your style of cooking.

Remember that you want to keep everything under the brine, which keeps the process anaerobic. While there are a lot of ways to do this, it is really very simple. (This process was perfected a long time before we could peer through a lens at the workings of microbes, before we even had glass.) Must the entire inner environment of the vessel be
anaerobic? It doesn’t have to be — lots of the crocks and pots and other vessels sold for fermentation have an open top and are meant to be used with just a weight and a towel.

However, fermenting in a big crock can be daunting and unwieldy, so most people choose to ferment in a jar. Fermenting in a jar is great for a number of reasons beyond the approachable size. The biggest benefit is you can see what is going on with your ferment, which is especially handy when you are first learning. For example, it is important to keep the ferment under the brine. You may wake up and see a huge layer of brine on top of your veggies and think, “Cool my ferment is making brine.” However, if you look into your glass jar, you can see that what is actually happening is that the brine is getting pushed out due to the trapped CO2; this is called a “heave” or a “surge.” You’ll be able to see the air pockets in the ferment where the brine

used to be. If you are using an open fermentation method, it is critical that you press on your ferment to allow the brine to sink back down, submerging the vegetables.

Though crocks, jars, and other open vessels work great, many people prefer not to deal with the yeasts and molds that can take up residence on that exposed top layer of brine — hence the invention of airlock systems that let the CO2 push the oxygen out and don’t allow new air back in. In this kind of system, air pockets are generally just CO2 and not oxygen, so it is not as crucial to press down on the ferment. That said, the flavor can still be affected if the vegetables are not completely submerged in brine, so it is best to press everything back down regardless of the system.

If your system does not allow air to escape, you have to burp your jar manually during the fermentation process so that the

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**Special Needs for Small-Batch Fermenting**

Most of the recipes within these pages have mighty flavor and therefore must be made in small quantities. This is not the large crock of veggies tucked deep in a dark part of the house where it will ferment for weeks and weeks without disturbance. Forget all of that for tiny batches. Small-sized ferments require special attention during the fermentation, or curing, time. Let’s just say they need babysitting.

Because small-sized ferments have less brine, it is often impossible to weight them down enough to keep the CO2 from creating air-pockets — remember, this whole thing needs to stay anaerobic. (Some of the new jar lid systems can help; see page 000.) To keep your ferment brine-covered, you will find yourself pressing gently on it or the weight often — even daily.
CO2 molecules have someplace to go. When the pressure is released and those molecules shake free, you actually get a burst of energy in the form a fizzing sound as the millions of CO2 molecules rush to get out the door (if they were bigger it would be a stampede).

Fermentation works in many environments, which is part of what makes it so incredible. New choices in small home fermentation systems continue to appear on the market. In the following chart, we look at various kinds to help you understand how each system works and decide which one is right for you. The instructions in this book assume you are using the basic jar method, but you can use any vessel you like, as long as you follow the instructions for that system.
Never made lacto-fermented vegetables before? No worries! In this chapter you will become a master of the techniques used to create flavorful pepper mashes, pastes, and brined-based pickles and sauces. Every lacto-ferment uses the same process — veggies of some kind + a little salt + anaerobic conditions. However, a spicy pickle is a very different ferment from a fiery herbal flavor paste, which is, again, different from a sauce.

Each recipe in this book will tell you which fermenting technique to use and detail the specifics that apply to that particular recipe. Think of this chapter’s step-by-step visual guides as a reference to consult not only before you begin, but also when you are standing in the kitchen looking at your ferment and wondering, *what do I now?*

**You Can Have Your Mash and Eat It Too**

Pepper mash is the worldwide queen of the sauce. A fermented pulpy gruel of mashed hot chile peppers and salt, it is the base of the hot sauces we know and love, from the vinegary Louisiana-style sauces (including Tabasco) to the unique flavors of Latin American and Caribbean sauces to the thick pungency of Asian-style sauces.
In a large-scale hot sauce plant, pepper mash is made by crushing whole red chiles with a hammer mill and adding a 5 to 8% salt ration. This mixture is then put into barrels. Traditional Louisiana-style sauce makers procure the charred white oak barrels previously used by Kentucky whiskey distillers. The barrels’ wooden lids are fastened with stainless steel hoops and blanketed with a thick layer of salt. Tiny holes in the lids allow CO2 to escape. The salt blanket hardens due to humidity and seals the barrel fully after the active fermentation process stops.

During the aging process, some of the liquid is lost through the porous wood, concentrating the flavors. It’s that fine wine or great cheese thing: time = delicious. Interestingly, science shows us that capsaicin compounds (responsible for spiciness) decrease slightly in the early stages of fermentation, right after salting. After that they stay steady, which is to say, the length of fermentation does not affect the spiciness of your product.

Beyond flavor, fermentation gives the product stability and thus a long shelf life; it also benefits the producer by breaking down the pulp in a way that keeps it from separating or layering in the bottles. When the mash is ready, the barrels are opened and the oxidized top layer of mash is removed. The rest is filtered and mixed with vinegar to produce the hot pepper sauce.

Though often aged as long as two or three years, pepper mash can be fermented in just a couple of weeks or months. This means that you have flexibility. If you are very patient and relish the idea of a long-aged ferment, go for it — your taste buds will reward you. If you are more of an instant-gratification type, do a quick ferment. It will still be delicious, and you will enjoy it soon. After all, Maunsell White, creator of what would become McIlhenny’s Tabasco Sauce, started the sauce by fermenting the mash for only 30 days. Or you can do both — we are giving you permission to have your mash and eat it too. Make a large batch, use some or even most of it, and stash some away to age.
The Salt Blanket:
Sealing Your Mash for a Long Winter’s Sleep

You can seal a crock (of a gallon or more) for a long aging process by covering it with a blanket of salt. The salt will soak up some of the brine, which will help thicken and concentrate your final product, but, more importantly, when you dry out this briny salt with the sun or a dehydrator, you will have a delicious, spicy, pepper-infused salt. You should be seeing cute jars and holiday gifts right now — if you are willing to share.

**STEP 1:** Make enough mash for at least a gallon-sized crock, allowing it to ferment for about 2 weeks.

**STEP 2:** Carefully remove any scum that may have formed. If you are using a plate followed by a jar for weight, remove the jar and leave the plate; also leave flat ceramic weights. Place a piece of muslin or cheesecloth across the top of the brine.

**STEP 3:** Pour a 2-inch layer of sea salt over the entire top of the ferment, letting the excess cloth stick out around the edges. Cover the crock and ferment for 6 months to 2 years.

**STEP 4:** When you are done aging the mash, lift the cloth with the brine-soaked salt and find your mash. Dry the salt.
Basic Pepper Mash: A Step-by-Step Visual Guide

A pepper mash can be made with any type of pepper, from sweet to fiery hot, or a combination of peppers. The process is the same no matter which variety or varieties you choose — with so many options, you have a lifetime of spicy experimentation ahead of you.

The trickiest part of fermenting a pepper mash is keeping it submerged and anaerobic. Unlike other ferments where the brine tends to float above the vegetables, the pulpy flesh and seeds of the mash tend to float to the top of the brine.

1. Mash any type of fresh pepper. Use a mortar and pestle, food processor, food grinder, or simply dice.

2. Mix in the salt. A lot of brine will form immediately.

3. When you press the mash into the crock or jar, you should see some brine above the pepper pulp.

4. “Tuck in” your ferment with one of the methods described in the fermentation systems graph (page 000).

5. Set the ferment on a plate in a convenient place that is between 55 and 75°F. Monitor it for floating pulp and air pockets (see Troubleshooting, below). After one to two weeks, move it somewhere out of the way for the long ferment. Note: The plate will catch any brine that bubbles out; discard the liquid.

6. Spoon mash into a stainless steel strainer over a bowl and press with the back of a wooden spoon until all that remains are the tough skins and seeds. Discard skins and seeds in a separate bowl and repeat the process until you have strained all the mash. Scrape the bottom of the strainer to get the last of the sauce.

7. To store, keep mash in an appropriately sized jar or bottle so that there is little or no airspace.
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2. Mix in the salt. A lot of brine will form immediately.

3. When you press the mash into the crock or jar, you should see some brine above the pepper pulp.

4. “Tuck in” your ferment with one of the methods described in the fermentation systems graph (page 000).
TROUBLESHOOTING

Pepper mashes will need some monitoring, especially in the early stages, for the dreaded floating pulp. The ground pulp holds tiny air pockets that make it float on top of the brine. When this happens, remove your weights and stir the pulp back in. As the ferment settles, it becomes easier, with proper weighting, to keep the pulp down and the brine on top. With a small, jar-sized batch where you can keep the lid tight, just burp out the CO2 as needed (page 000), and shake up the jar when you see separation.

Ferments containing a lot of peppers often develop a bloom of kham yeast. We have seen this happen even in carefully monitored airlock systems. You may think the ferment isn’t working, but rest assured — it’s harmless, and as long as there’s enough brine, the peppers will be safe and tasty beneath it. You don’t need to remove this layer, as it will bloom again across the top of the brine the very next day. If you keep removing it at the rate it appears, you will lose that all-important layer of brine.

Cease and Deseed?

For most sauces, it is all right to ferment the mash without removing the pepper seeds, which add a little more heat (and some chewiness). After fermentation, they will get strained out along with the tough skins for a smooth mouthfeel in your final product. You don’t have to throw them out, though, even at this point. Instead, turn the fermented skins and seeds into a flavorful probiotic seasoning: Spread them on dehydrator trays and dehydrate at 105 degrees for 8 to 12 hours or until dried. Blend and store in an air-tight container.

On the other hand, if you are making a sweet pepper mash or using a very thin-skinned pepper that won’t require straining (Fresno or habanero for example), deseeding is worth it. You will get a nice, thick, ready-to-use mash. Finally, a few paste recipes include the seeds and never get strained, like the rempah base for sambal (page 000).
This chapter will introduce you to the ingredients that make your fiery ferments, well, fiery. We’ve divided it into two sections: first, the spicy ingredients used in many parts of the world before chiles came along; second, the now famous chiles. In chapter 4, we’ll offer a handful of unique pre-chile recipes before we dive into all the things the chile pepper can do.
HOT AND SPICY B.C.
Before Chiles

Humans have been seeking flavor and spice for a long, long time — many years before trade brought aromatic and tasty gifts from far and wide. Before chiles found their way out of South America as the collective burn of choice, humans across the globe relied on a number of different spices. In this section, we want to introduce you to some of these lost and found flavors.

Ginger
Cultivated in tropical Asia for over 3,000 years, ginger (*Zingiber officinale*) is perhaps one of the oldest fundamental spices. Its origin is ambiguous, but it was used extensively in the cuisines and medicine of ancient China and India. (Pots found in New Delhi had residues of turmeric, ginger, and garlic from around 2500 BC.) Because ginger is a rhizome and easily transported fresh or dried, it was a good candidate for early trade, which might explain why it was one of the first Eastern spices to reach the Mediterranean. From Rome, it traveled to northern Europe.

Ginger’s warm, woodsy flavor is pleasingly hot with rich, sweet notes — what’s not to like? The world seemed to be in agreement. Arab traders introduced ginger to East Africa, and the Portuguese brought it to the other side of the vast continent. Meanwhile, Spanish explorers took it with them to the West Indies. Ginger found its way into savory dishes and sweet confections everywhere.

Ginger is available year round, but like all produce, its freshness waxes and wanes due to harvest times, shipping, and storage. The other factor affecting flavor is how long the rhizome was allowed to grow. Ginger is most pungent and fibrous when harvested after eight to ten months of growth. The skin is thick and papery, and the roots do not appear plump (this may also be the case if it has been stored a long time). This older ginger is better for recipes in which the ginger is grated. The flavor is wonderful, but the fibers can get in the way of a pleasing ginger pickle. For pickled ginger and some of the following recipes, use ginger that is plump with a thin, moist, almost translucent skin.
Warm Medicine

Ancient healing, folk remedies, natural medicine and Traditional Chinese Medicine use ginger liberally for conditions that require warming the body. It is believed to improve circulation, aid digestion (from stimulating saliva and bile production to moving food through the GI tract), reduce nausea, ease the symptoms of colds, increase energy, and reduce inflammation.

Galangal

There are two varieties of galangal root. The lesser (Alpina officinarium) is from China and is more pungent, preferred for medicine. The greater (Alpina glanga) is from Java and is sometimes called sand ginger or cekur. We will concentrate on greater galangal, since you are more likely to find it in the West. A common ingredient in the Southeast Asian cuisines of Indonesia, Thailand, Malaysia, Vietnam, Laos, and Cambodia, this rhizome is used in soups, sauces, stir-fries, and — most relevant for our purposes — pastes and sambals. Galangal was also popular in Medieval Europe as both medicine and food.

Though a relative of ginger, galangal is not a substitute for ginger, or vice versa. Its flavor has more pepper notes and is a little fruitier than ginger; some find it hotter. In appearance, it is much thicker than ginger and lighter in color, with pink hues on the shoots. It is also much denser and more fibrous, and must be ground or grated to be used in ferments. In many Asian stores you can find it both powdered and fresh. We also often see it in co-ops and natural food markets. Make sure the pink shoots are fresh-looking and unbruised.

“I think ginger has a heat, a warmth that is often not fully understood because I think people use a small amount. And if you use quite a lot, you really see that it’s like reaching for another form of pepper.”

NIGELLA LAWSON
**Long Lost Cousin Zedoary**

In our readings about the spice trade, zedoary was mentioned often. Zedoary (*Curcuma Zedoaria*), also called white turmeric, is highly aromatic and has a flavor reminiscent of rosemary. It was brought to Europe in the sixth century and topped the food trend charts in the Middle Ages before slipping back into obscurity. It is still used in Asia for condiments that might also use ginger or turmeric.

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**Turmeric**

Turmeric (*Curcuma longa*) does not pack a heat punch but is considered a pungent spice. A peppery, bitter quality complements its otherwise dusty flavor and woody fragrance. Fresh turmeric is sweeter and more delicate than its dry, powdered counterpart. From the outside, this rhizome looks a bit like a skinny, finger-sized, dull orange version of its cousin ginger. Inside the skin, its brilliant golden-orange hue has made it a popular food coloring and dye for a millennium. In fact, Marco Polo compared galangal, which he met in China in the thirteenth century, to saffron — and sure enough, it became a “cheap” substitute for saffron in Western cuisine.

However, turmeric’s history runs much deeper. The plant is native to Southern India where it has a 4,000-year-old medicinal and culinary history. Since it does not propagate by seed, it’s spread across China, Asia, and Africa was completely dependent on people. Turmeric shows up in Egyptian writings around 1500 BC. Most people know turmeric in its dried, powered form, but it is increasingly common to find these fresh rhizomes in the produce section of the market. In recent years it has become widely available, in part due to the stellar antioxidant, anti-inflammatory, and other health benefits of its active ingredient, curcumin. Look for roots that are firm, with good color and no pockmarks in the skin.
Horseradish

Horseradish is thought to be native to central Europe and western Asia. It is in the brassica family of veggies, a large, distinguished group, but for our purposes we will focus on the members that share that nose-twitching vaporous burn—mustard and wasabi. They contain the compound allyl isothiocyanate, which, like capsaicin in the chile, is the heat culprit. The difference is that this compound is light and volatile, so when you take a bite it heads up and out your sinuses and nose. Capsaicin is heavier, sinking into your tongue and making its way down your system.

Mustard

Mustard is thought to be one of the first, if not the first, piquant spice. Early recorded history tells us mustard seeds were chewed with meat. The fermentation of mustard seeds (especially the white variety) goes way back. Early on, when the concept of “antimicrobial” was thousands of years away, someone noticed that these seeds have outstanding preservative qualities and added them to some of the first pickled foods. Mustard in Latin was called mustum ardens, meaning, roughly, “burning wine.” This is because ground mustard seeds were mixed with must—the freshly pressed juice, skin, and seeds of wine grapes.

Is Your Wasabi Horseradish?

Probably. Most people have never tasted real wasabi — even in Japan, where botanical texts tell us it has been on the menu since 794 CE. True wasabi (Wasabia japonica), which has a thick, rootlike stem, has fairly particular growing requirements and takes around three years to mature. Horseradish (Armoracia rusticana), on the other hand, can be almost weedlike in the garden and is therefore more available commercially and a lot cheaper. The nose-tingling green paste is usually made from a combination of horseradish, mustard, starches, and green coloring.

As far as flavor goes, real wasabi is said to offer a much more delicate heat, but it is also quite volatile: the flavor dissipates and is lost only fifteen minutes after grating. This does not make it a good candidate for fermenting. We have dumped a lot of wasabi powder in things just to lose the flavor. Use fresh horseradish as a substitute (everyone else does).
Nutrient-dense mustard seeds are high in antioxidants and high in selenium, also known to have anti-inflammatory properties. On our plates, that tasty squirt of mustard is known to stimulate the appetite and, in moderation, is a digestive aid because it increases the action of our salivary glands eightfold — truly a mouthwatering condiment.

You will see four names for mustard seeds: yellow, white, black, and brown. “Yellow” and “white” are two names for the same seed, and they are actually brown and light tan in color. These light-colored seeds are the most common type of mustard seed. “Black” mustard seed is a bit spicier and less common (since it requires hand harvesting) than “brown” mustard seed, but these monikers are often used interchangeably despite the difference. Many recipes for prepared mustard mix white and brown seeds in order to provide complex flavors and control heat levels.

When you get the hang of making mustard, keep inventing — mustard is easy and you may realize that you never want to buy it again.

Mustard Medicine

Mustard seed’s role wasn’t always as a condiment on our plates. In ancient cultures, its role was often medicinal rather than culinary, with some superstition mixed in:

» In Greece in the sixth century BCE, Pythagoras used mustard as a cure for scorpion stings. (No idea if it worked). A century late, Hippocrates used it to make poultices.

» Egyptians used mustard to treat gastrointestinal disorders. They also knew about its antimicrobial qualities to combat foodborne bacteria and pathogens.

» In India, where mustard cultivation was believed to have begun in 3,000 BCE, it has also been used for gastrointestinal disorders, as well as ulcers, respiratory disorders, and diabetes. It also was believed that spreading mustard seeds around one’s home would keep away malicious spirits. (Good to know.)

» The Romans reputedly brought mustard to Britain where it was used to treat chilblains (a skin condition). Meanwhile, German brides would sew the seeds into their wedding dresses for domestic success; the seeds were thought to guarantee that the bride would be the authority in her household. The Danes felt that mustard seeds mixed with mint and ginger would stimulate a healthy desire and passion.
Peppercorns: Black, Green, and White

There was a time when a satchel full of peppercorns meant you had some spending money — rent, taxes, a night out. This stuff was worth its weight in gold. Black peppercorns are the sundried, fermented, unripe green berries from the vine *Piper nigrum*. Green peppercorns are the same green berries, but they are not fermented before they are dried. They have a wonderful, light, milder taste, and in Asia they are often used fresh and pickled instead of dried. White peppercorns are the ripe berries soaked in water to remove the outer skin, then dried.

The pretty red or pink peppercorns (*Schinus molle* or *Schinus terebinthifolius*) are not in the pepper family and are considered slightly toxic — but don’t worry, you’d have to eat a lot of them to do any harm.

The Other Peppers

Ships did not sail around the globe only for black pepper. There were a lot of options to bring that peppery tingle to your plate. Each of the following ingredients was lost to the Western diet, but, thanks to global trade, has been found again.

Grains of Paradise

For many centuries, spices were the most expensive household items in both the East and West. In the West they were kept in locked cupboards and used as medicine, perfumes, and preservatives, as well as flavors. Grains of paradise (*Aframomum melegueta*), however, one of the cheaper substitutes for black pepper in the middle ages, may not have been locked up. After all, it came from West Africa — a lot closer to Europe than India.

This medieval spice, along with cubeb and zedoary, is nearly lost to us, though chefs are slowly rediscovering it. The flavor is a great combination of black pepper and cardamom, but more woody and lighter than both. The heat is slow and lingers nicely. In keeping with the region from which it hails, we use this spice in our fermented Harissa on page 000. You will also find it in a pickle mix based on Bartolomeo Scappi’s spice blend on page 000.
CUBEB

Cubeb (Piper cubeba) is native to Java, a member of the same family as black pepper, and is still used in Indonesian cuisine. Imported by the Arabs, it was once a common spice in the West. Its decline began in the 17th century when the king of Portugal forbid the sale of cubeb to promote the sale of black pepper. Otherwise we might all have cubeb mills on our table with the salt shaker. This spice has medicinal qualities, and its warm turpentine flavors are more in line with allspice than black pepper. Today’s global market now makes it available with a click of the mouse.

Getting the Most from Your Spices

A spice is usually defined as a pungent or aromatic substance that comes from a plant — but not the leaf (those are herbs). When we use the word spice we are talking about roots, berries, seeds, or barks. These different parts of a plant vary in the ways they hold on to or release the volatile oils that we taste and smell. Two tips about spices:

Buy whole spices in small quantities. Whole spices last about two times longer than ground and when they are freshly ground you are releasing the flavors and aromas at that moment and not losing them to life in a jar. Spices get their flavor and aroma from flavor molecules — of which they have a high proportion. This is because as soon as the spice is ground the volatile oils are released and with them the bold aromas as well as the subtle ones. The ones that are left are the more stable compounds, which can give the spice a flatter flavor.

Toast them. Now that you have whole spices, you’ll want to release the full potential of their flavors. This is done with a little heat. Most of the spices we use in this book can be toasted on a dry pan at medium-low heat; shake them or stir with a wooden spoon to heat slowly and thoroughly without scorching.

Of course there are always exceptions: don’t toast your peppercorns. Piperine is the pungent, spicy compound that makes pepper pepper. When toasted, however, it mellows out and the pepper loses its bite.
SICHUAN PEPPER

Also called Szechuan pepper, Chinese prickly ash, fagara, and Nepal pepper, Sichuan pepper is one of China’s oldest known spices and is also used extensively in the cuisines of Nepal and Tibet. This spice is the dried berries (sans seed) of the Chinese prickly ash, a small shrublike tree. It is sharp, tingly, numbing, somewhat bitter, lightly citrusy, but not hot in the way that black pepper or chiles are. In some pickles and dishes, this numbing sensation combined with the heat of the chile can set up your mouth for quite an experience.

We have a number of pickle recipes inspired by traditional Nepalese achar that use Sichuan pepper and chiles. Be sure to pull out any of the tiny black seeds that are still floating around with the husks before using.

LONG PEPPER

Long pepper (*Piper longum*) had its day in the sun. At one point in time, it was one of ancient world’s most popular spices. As with many aromatic spices, it was used in the apothecary as well as the kitchen. The Romans preferred its juxtaposition of hot and sweet and paid up to three times more for this spice. In medieval Europe, long pepper was used interchangeably with the now more common black pepper, a botanical cousin.

Long pepper comes from the dried, brownish-black flower spikes of a perennial flowering vine, harvested before the tiny berries (the size of poppy seeds) are fully ripened. These minute fruits are embedded on a strand resembling a dried immature hazel or alder catkin. In fact, some speculate that this long, skinny pepper could be the very pepper that Columbus was thinking of when he mistakenly called the chiles he encountered in the New World “peppers.”

When you open a jar of long pepper, you will not smell that familiar pepper scent. This pepper does not have much scent at all, nor that distinctive black pepper flavor, though it is indeed pungent and actually a little more intense. Its heat lingers on the tongue with a warm tingle, combined with a wonderful...
Mind-altering Pain: Capsaicin and Your Brain

As soon as a hot pepper’s capsaicin hits your tongue, the pain receptors in your mouth, nose, and throat send SOS messages to your brain — PAIN, PAIN, PAIN . . . HELP. Your brain responds by releasing endorphins, our own natural (and addictive) painkillers, which give us a rush of relief — relief that comes with feelings of euphoria akin to what you get from a “runner’s high,” sex, coffee, or marijuana. Chiles do, after all, come from the psychotropc plant family. Maybe John Mellencamp was actually singing about chiles when he crooned, “It hurts so good.”
Nearly all hot sauce cookbooks exclusively feature the chile — after all, she conquered the world with her fiery spice and everyone wants to invite her to the dance. We will cover techniques for fermenting chile peppers, as well as the advantages and disadvantages of the most common varieties and the subtle flavor profiles of uncommon varieties.

**Where Does the Fire Come From?**

What makes peppers hot and spicy is capsaicin. All peppers have it to varying degrees, except the bell pepper that, while a member of the same family, *Capsicum annuum*, carries a recessive gene that eliminates capsaicin. Capsaicin is an alkaloid that does not contain any of the flavor (or color) of a pepper but all of the heat. This compound is potent! So much so that it withstands extended periods of freezing, drying, and heating without losing its punch. We have noticed that the curing time of fermentation can take it down a notch, but once fermented, this substance stays stable.

Our mouths have the ability to feel even the smallest amount of capsaicin, which we experience as painful burning and short-term inflammation. One person’s pain is indeed another person’s pleasure; for fiery food enthusiasts, this pain is exactly what they seek.

The common belief is that the seeds are where the heat of a chile lurks and that removing the seeds will keep the heat tolerable. This is true in part — removing the seeds helps, but their guilt lies in that they are tucked into the pith, the innocuous-looking spongy white part that makes up the core and ribs inside the pepper. Capsaicin is produced in the cells of the pith, not the flesh or the seeds.

If you have very hot peppers and want to do some damage control, carefully take out all the pith (also called the placenta) with gloved hands. Set it aside, and remember to taste your creation before you tuck it in for fermentation. If you want a little more heat, put some of the pith back in. Keep in mind when tasting your ferment that the heat often mellows a little.
The skin of a chile is actually made up of three layers: The outermost layer is the exocarp, what we think of as the skin. On some peppers it is so thin that its texture is barely noticeable, but on others, like the Anaheim chile, it is so thick that it is usually roasted off. The mesocarp is that fleshy, crisp layer that is the meat of the chile. The endocarp is the innermost, thin layer of membranes.

FERMENTISTA’S TIP: Tasting the Flavor of Extremely Hot Chiles — Safely

Kirsten writes: I enjoy spicy food, I enjoy some heat, but I am not a bonafide hothead. There, I said it. I love the flavors of chiles, but I don’t want to be taken out for twenty minutes. Fortunately, this stance can be accommodated — very carefully. The white pith is usually non-existent at the very bottom tip of the pepper, and I have found if you bite the tiniest piece of that tip, you can taste the pepper without getting bit yourself. Or you can use Christopher’s method . . .

When we were writing this book we grew dozens of pepper varieties. Christopher helped care for them, admired them, and asked me regularly, “Now what pepper is this?” So when a bush of the tiny, mighty, chile pequin peppers had finally ripened (to be fair, we asked it to grow in Oregon), he did not remember this chile’s character. I picked a pepper and held it up as he passed by. Before I could say that-is-super-hot he took it and popped the whole thing in his mouth. He said, “cantaloupe” and then went quiet . . .

Christopher writes: I remember that little pepper was so bright it looked like an exotic sweet fruit, and I just ate it. I swear I tasted cantaloupe before my peripheral vision turned dark. There was a fire in my mouth, I was sure of it. All I could think of was getting up the hill to the farmhouse, to the refrigerator, and to the milk. Just three things, in that order, nothing else. I don’t think I have ever been so clear and focused in my life.
MEET A HEAT MAKER

Smokin’ Ed Currie, PuckerButt Pepper Company, and the Carolina Reaper

Ed Currie of Fort Mill, South Carolina, holds the Guinness Book world record for cultivating the world’s hottest pepper — the Carolina Reaper, clocking in at 1.56 million Scoville units. In the cutthroat world of competitive chile breeders, there is drama and spectacle on par with professional wrestling. Pain-seeking fans enter brow-sweating, eye-popping, gut-wrenching contests. It’s a world of irreverently named hot sauce brands and crude jokes about the hazards of touching hot peppers before touching the male anatomy.

For Currie, however, there is much more to the story. Beyond the fun of Puckerbutt’s storefront and extreme pepper sauces is a passion for health. The hot sauces are created with whole food nutrition in mind, and all of the peppers and fruit for the PuckerButt sauces are grown by the Curries. And the world’s record-holding hot pepper wasn’t bred for the record. He bred it for chemotherapy patients.

Currie’s mission is to breed pepper strains that have high levels of capsaicin for fighting heart disease and cancer. He sees the hot sauce business as the high-profile front end of the much more interesting undertaking of breeding peppers for medical research, which is where most of the tens of thousands of peppers he grows end up.

The Carolina Reaper came about when Currie was working on a pepper with a sweet flavor for chemotherapy patients. These patients lose most of their taste receptors but can still taste sweet. He said that more complex sugars tend to make these patients sick, so he was looking to breed a sweet pepper that they could eat. “And it worked,” he said, adding, “The capsaicinoids kill the cancer cells, and for circulatory heart health, the fat cells bind with the fats and take them through the liver before you piss them out. Excuse the language.”
PART 2

FIERY FERMENTS
The following chapters will crisscross a world of flavor and textures through a myriad of fermented hot sauces, flavor pastes, condiments, relishes, kimchis, fermented salads, chutneys, achars, and brined pickles.
SPICY PRE-CHILE RECIPES

A few sentences about the recipes in this chapter...
FERMENTED GINGER PICKLE

In early winter, the produce section is loaded with newly harvested ginger, galangal, and turmeric roots; they are full, succulent, and fresh. This is the time to preserve some of them. If you are lucky, you might find varieties beyond the widely available yellow ginger, such as the milder baby ginger, labeled “pink,” “young,” “new,” or “stem” ginger, or the zestier blue Hawaiian ginger.

This recipe can be used for any kind of ginger, turmeric, or galangal, though galangal is more fibrous and better suited for a grated paste. We use these slices throughout the year to flavor meals or to put in other ferments to give them a head start (for example, when starting a hot sauce with only dried chile pods).

FERMENTISTA’S TIP:
Should You Peel Ginger?

There is no reason, beside aesthetics, to peel the ginger root. When we are grating the root in with many other ingredients, it is simpler to wash the skin and leave it on. Plus, the skin is where our friends the lactic-acid bacteria hang out. Try to use organic ginger, however, since conventional ginger is often irradiated, which can kill the lacto-bacillus.

- 1 pound fresh ginger root
- ½ teaspoon salt

1. Prepare ginger by peeling the skin and slicing as thinly as possible — think of the pickled ginger alongside a plate of sushi. Place these slices in a bowl.

2. Mix in the salt.

3. Pack the mixture tightly into a pint jar and top with a water-filled Ziploc bag to keep everything tucked under the brine.

4. Place on a plate and set aside, out of direct sunlight, for 7 to 14 days. During the fermentation period, monitor for air pockets, pressing down the ginger if needed. As the ginger ferments, the color will change slightly. The brine will be milky.

5. When they are ready, transfer to the refrigerator. These pickles will keep, refrigerated, for 12 months, provided the ginger is kept under the brine.

VARIATION: GINGER (OR OTHER RHIZOME) PASTE

Roughly chop the ginger. Blend in a food processor with the salt until you have a smooth, even paste. Ferment according to instructions for Fermenting Pastes, Condiments, and Mustards: (page 000).
HORSERADISH FERMENT HOT OR HOTTER

This ferment is amazing, but can be a little tricky because you don’t have the luxury of waiting for the lactic acid to develop. As soon as the cells of the horseradish root are damaged by grinding or chopping, enzymes immediately begin breaking down the compounds. The sooner the acid is introduced to stabilize it, the sharper the flavor.

You can acidify your ferment by using some fermented brine from a previous ferment as the acid. Or you can get crazy and inoculate it with a pepper paste to get hot compounds from all directions. If neither of those options work for you, you can use lemon juice. In any case, make sure the roots you get from the store are fresh — roots that are drying out will not be hot and may taste quite bitter. Lastly, this ferment will continue to mellow over time. We recommend making smaller quantities more often.

1. Peel the horseradish and cut it into small chunks. Grind them in a food processor with the salt and brine until it forms a paste.

2. Pack carefully into a jar that is just the right size for your ferment, releasing any air pockets as you press in the paste. This ferment is exceedingly dry — keep packing; it will work even though you won’t see liquid forming.

3. Press a piece of plastic (or other cartouche) against the surface, being careful not to trap any air beneath it. Screw the lid down tightly.

4. Put the ferment in a corner of the kitchen to cure, and watch for air pockets forming in the paste. If you see them, open the lid and press the paste back down. If the lid starts to bulge, simply open it for a moment to “burp” the ferment.

5. Allow to ferment for 7 to 14 days. It is difficult to see any obvious changes, but it will taste acidic and pungent, like prepared horseradish.

6. Place a small round of plastic or wax paper directly on top of the paste. Tighten the lid, then store in the fridge. Refrigerated, this ferment will keep its full flavor for 3 months.

WARNING: If you haven’t worked with fresh horseradish root, you want to be aware that it can bite—as in sting your eyes and sinuses, because grating or grinding releases the compounds. Be cautious and don’t get your face too close to the root when working with it.

- ½ pound or so horseradish root, to make about 1 cup grated
- 1 teaspoon salt
- 2–3 tablespoons sauerkraut brine, lemon juice, or chile paste
Horseradish Mustard

This is spicy mustard, a hands-down favorite at our house. If you like the spice but want a milder version, try mixing it half-and-half with mayonnaise or aioli.

1. Place the horseradish root in the blender with the unchlorinated water, mustard seeds, garlic, turmeric, and salt. Blend until smooth. As the mustard seeds break down, they act as a thickening agent and will become creamy. Keep blending to a uniform paste.

2. Spoon your mustard into a pint jar, pressing out any air pockets as you go. When it is all in the jar, you may need to use a butter knife to work out any remaining pockets.

3. Place the lid on the jar and tighten. Set on your counter to ferment for 3 days.

4. Open the lid (it may pop slightly as CO2 is released) and stir in the vinegar and sugar or honey. It will take a little while for the sugar crystals to melt into the mustard, at which point your mustard will be ready to serve.

5. Store mustard in the refrigerator for up to 3 months.

ADD AFTER FERMENTATION:

- 2–3 tablespoons fresh horseradish root, peeled and grated
- 1 cup cool, unchlorinated water
- ¼ cup white mustard seed
- ¼ cup brown mustard seed
- 2 cloves garlic, grated
- 1 teaspoon fresh turmeric root, grated (¼ teaspoon powdered)
- 2 teaspoons salt

Spicy Fun Legend

Myth has it that the oracle at Delphi told Apollo, “The radish is worth its weight in lead, the beet its weight in silver, the horseradish its weight in gold.” Well, yeah, the Greeks thought horseradish was a pain reliever and an aphrodisiac—need we say more?
GREEN PEPPERCORN PASTE

This recipe was inspired by a list describing the likely cuisine of thirteenth-century Thailand. The meal consisted of glutinous rice with vegetables (sometimes fermented), meat or fish, soup, and a paste of shallots, galangal, and green peppercorns. Of course they used these green peppercorns when they were still soft and fruity instead of dry. We claim no authenticity in terms of thirteenth-century flavor!

This sweet paste, and its variation with turmeric, has become one of our go-to ferments for adding subtle flavor to anything from a cucumber salad to chicken meatballs (see Making Your Own Sausage, page 000).

1. Process all of the ingredients to a paste consistency in a food processor. This ferment will be nice and juicy due to the shallots.

2. Pack carefully into a jar that is just the right size for your ferment, releasing any air pockets as you press in the paste.

3. Press a piece of plastic (or other cartouche) against the surface, being careful not to trap any air beneath it. Screw the lid down tightly.

4. Put the ferment in a corner of the kitchen to cure, and watch for air pockets forming in the paste. If you see them, open the lid and press the paste back down. If the lid starts to bulge, simply open it for a moment to “burp” the ferment.

5. Allow to ferment for 7 to 14 days. This ferment is super tasty after the first week of fermentation, then not as great the second week. But give it a month in the refrigerator, and the flavor is amazing. You will know it is ready when it has a nice sourness and the flavors have mingled.

6. Place a small round of plastic or wax paper directly on top of the paste. Tighten the lid, then store in the fridge. This ferment will keep, refrigerated, for 12 months.

- 4 tablespoons lemon grass, chopped
- 1 tablespoon whole green peppercorns
- galangal root, grated
- 6 cloves garlic
- ¾ pound shallots (about 7 medium shallots), chopped
- 1 teaspoon salt
- 1 tablespoon dulse
VARIATION: GREEN PEPPERCORN PASTE WITH TURMERIC

Yield: About 1 pint

Follow the instructions for Green Peppercorn Paste and add 1½ tablespoons chopped turmeric (about ½ ounce) to the mixture.

FERMENTISTA’S TIP:
Toasting Long Pepper

“Blooming,” or toasting, long pepper on a dry pan brings out the kick. As you toast it, you will see the color change from dark brown to a lighter shade of brown. At the same time, the peppers will soften as they warm, which makes them easier to grind with a mortar and pestle. If you are using a coffee grinder, allow them to cool a bit.

Turmeric + Black Pepper = A perfect blend for flavor and health

Curcumin is turmeric’s superpower, however our body’s ability to absorb it into our bloodstream is poor. Fortunately, the bioavailability of curcumin is greatly enhanced by the simple addition of piperine — the alkaloid responsible for black (and green) pepper’s heat.
GREEN PEPPERCORN MUSTARD

This mustard has a wonderful kick; it is spicy but in a very different way from the heat of chile or the sinus-invigorating horseradish. The ground green peppercorns also give this mustard a fun, flecked appearance.

- 2 tablespoons green peppercorns
- ¼ cup white mustard seed
- ¼ cup brown mustard seed
- 1 teaspoon fresh turmeric root, grated
- 2 teaspoons salt
- 1 cup unchlorinated water

ADD AFTER FERMENTATION:
- 2 tablespoons white wine vinegar
- 1 teaspoon brown sugar or honey (optional)

1. Place all ingredients in a blender. As the mustard seeds break down, they act as a thickening agent and will become creamy. Keep blending until it reaches a paste consistency.

2. Spoon your mustard into a pint jar, pressing out any air pockets as you go. When it is all in the jar, you may need to use a butter knife to work out any remaining pockets.

3. Press a piece of plastic (or other cartouche) against the surface, being careful not to trap any air beneath it. Screw the lid down tightly.

4. Put the ferment in a corner of the kitchen to cure. Watch for air pockets forming in the mustard. If you see them, open the lid and press the mustard back down. If the lid starts to bulge, simply open it for a moment to “burp” the ferment.

5. Allow to ferment for about 7 days. Mustards are ready to eat immediately, but the fermentation time gives them a nice, smooth acidity and brings them to a lower pH, which improves preservation.

6. Store mustard in the refrigerator for up to 12 months.

Failed Experiment

Since dried green peppercorns are significantly softer then a black peppercorns and since brined green peppercorns are not readily available in this country, we were hoping we could rehydrate them to create a pickled peppercorn. We tried soaking the green peppercorns for a few days, then a few weeks, in sauerkraut brine. No luck: they did not soften a bit.
LONG PEPPER CURRY PASTE

This recipe was inspired by jalfrezi curry paste, though it took some twists and turns and doesn’t resemble a traditional jalfrezi paste at all. It was quite a week as I roasted and ground long pepper along with the usual curry suspects—notably cumin, coriander, and fenugreek.

By the end of the week I had many little jars lined up with my initial ideas and the adjusted versions of them. There were also a lot of pages of scribbled notes to self. This particular version was one of the winners.

- 1 bunch cilantro
- 3–4 medium to large cloves garlic
- 1 ounce, or a thumb-sized piece, of turmeric
- 1 ounce, or a 2-inch piece, of ginger
- ½ teaspoon salt
- 1 tablespoon toasted and ground long pepper
- 1 toasted and ground teaspoon each of cumin, coriander, fenugreek and mustard seeds

1. In a food processor, process the cilantro, garlic, turmeric, and ginger to a paste consistency.

2. Sprinkle in the salt. Since the cell walls of the ingredients are already broken down, the paste will become moist right away. However, this type of ferment will not look juicy. Add the rest of the spices. Mix well.

3. Pack carefully into a jar that is just the right size for your ferment, releasing any air pockets as you press in the paste.

4. Press a piece of plastic (or other cartouche) against the surface, being careful not to trap any air beneath it. Screw the lid down tightly.

5. Put the ferment in a corner of the kitchen to cure, and watch for air pockets forming in the paste. If you see them, open the lid and press the paste back down. If the lid starts to bulge, simply open it for a moment to “burp” the ferment.

6. Allow to ferment for 7 to 14 days. You will know it is ready when the ferment changes to a deeper color and any brine turns a brownish cloudy color. There will be a tang to the flavor that wasn’t there when it was fresh.

7. Place a small round of plastic or wax paper directly on top of the paste. Tighten the lid, then store in the fridge. This ferment will keep, refrigerated, for 6 months.
PART 3
ON THE PLATE
WE ARE INSPIRED SIMPLY BY WHAT TASTES GOOD. We know when something works because it is more than the sum of its parts — it is comfort and nourishment for the mind, body, and soul. There is no apparent theme or cuisine that we draw upon for our recipes, except for a passion around whole, real foods. We hope you will find some delicious flavors that inspire you, and that you’ll add your own twists of flavor to make them favorites in your family.
Sure, Tabasco and salsa are standard accompaniments for egg breakfasts, but for the purposes of this book, that feels like the easy way out. So we will tell you right now, go ahead, put hot ferments on your eggs — omelettes, breakfast burritos, quiches, scrambles, sunny side up, over-easy . . . Now that we have that out of the way, we hope to introduce you to some fresh ideas. Make your own spicy breakfast sausage (000), try a savory smoothie (000), or make a delicious, healthy breakfast quinoa (000).
Adventures in Toast

Toast can be as simple as white bread and marmalade, but we want to share some ideas that propel toast to a whole new status — complete (read: healthy), filling, and delicious. To this end, we introduce the three most important rules for good toast. Use this guide as a steppingstone to your own amazing toast adventures.

Rules for Good Toast

1. All toast starts with great bread. Choose anything from a crusty levain sourdough to a dark, heavy pumpernickel, from a raw seed bread to a good gluten-free option.

2. Add a fat/protein. This is the soul of toast, or at least the smooth, warm inner heart, rich and nourishing. This is also the fantastic place to add those strong spicy ferments. Butter, creamy cheeses, nut butters, coconut butter . . .

3. Add something fresh: This can be anything from greens or fresh fruit to a ferment (Dried Chile Pickles, page 000, using Aleppo peppers in a pomegranate brine — oh my!). We often pair cucumber with hot ferments to temper the heat.
The Art of Toast

Here are some delectable combinations to get you started:

- Toasted sourdough, Piri Piri Emulsion (page 000), cucumber slices
- Toasted pumpernickel, Horseradish Anchovy Butter (page 000), slices of hardboiled egg, cucumber slices
- Toasted whole grain, nut butter and Sweet Chile Sauce (page 000), sautéed kale leaves
- Toasted crusty bread, hard boiled eggs mashed with aioli, dollop of Pickliz (page 000)
- Toasted rye (light or dark), Adzika Anchovy Butter (page 000), spinach and/or dandelion greens
- Toasted seed bread, avocado smashed with Zhug (page 000), pomegranate seeds sprinkled on top
- Toasted sourdough, Buttermilk Cheese (page 000) with Kumquat Chutney (page 000), thin slices of pear
- Toasted gluten-free coconut-based bread, Thai Red Curry (page 000) and Anchovy Butter (page 000), apple slices and/or shredded Napa cabbage
**SPICED ANCHOVY BUTTER**

This simple spread is beyond easy, lasts well in the refrigerator, and is an excellent vehicle for many of the ferments in this book. A powerhouse of tasty fat, it is a great toast spread but also much more. Put it in your baked or mashed potatoes, melt it over roasted root veggies or cauliflower, or drop a dollop into a bowl of soup right before serving. We’ll share a few of our favorite ferments to add to this recipe.

Not an anchovy fan? We hear you. It took us a long time to work anchovies, sardines, and other small fish into our diet. These fish are low on the food chain and healthy sources of good fats and protein. A little goes a long way, so spring for a good brand, packed in oil, in a glass jar (you’ll avoid an overly salty, metallic taste). If you still don’t think anchovies are for you, or you are a vegetarian, just add a ferment to plain salted butter or raw coconut butter.

1. Place the butter in a bowl, and smash it with a fork to spread it around the bottom the bowl.
2. Add the chopped anchovies and mix until evenly distributed.
3. Add the ferment of choice. Pastes work the best; if using a watery ferment, drain the brine and chop before adding. Adjust the amount of ferment depending on your taste.

**Suggested Butter Blends**

- Adzika (page 000): Use 2 tablespoons or more. This mild ferment has a fresh dill flavor that marries beautifully with anchovy.
- Thai Red Curry Paste (page 000): Use 2 tablespoons for a mellow butter (we like 3 or 4). This flavor powerhouse is not for the faint of heart (maybe brunch not breakfast).
- Long Pepper Curry Paste (page 000): Use 2 tablespoons. This is a wonderful way to incorporate this dry paste into any recipe to give it warm flavor and a touch of curry.
**SIMPLE BUTTERMILK CHEESE**

No Cultures Required

This cheese (adapted from a recipe by Norene Gilletz in her book *MealLeanYumm!*) is beautifully simple, even if you have never made cheese. The buttermilk is already fermented and acidified, so you are just separating the curds and whey. Similar to what some call a “farmer’s cheese,” *quark*, or *tvarog*, it is deliciously creamy and mild and a little less sour than a *leban* (yogurt cheese).

The best part about this cheese is that it is great for highlighting your spicy ferments. Try mixing in a few tablespoons of Adzhika (page 000) or Zhug (page 000) for a mild savory cheese, or chop in a few tablespoons of Kumquat Chutney (page 000) for a spicy citrus flavor, or step up the heat by stirring in a little Vanilla Pear Habanero Sauce (page 000). Spread it on your toast, or stuff your pickled peppers (page 000).

- 2 quarts of cultured buttermilk

1. Preheat oven to 375° F.

2. Pour the buttermilk into a large, ovenproof glass casserole dish with a cover. Heat in oven for 15 to 20 minutes. It will be ready when you see it separate into curds and whey gathering around the edges of the casserole dish.

3. Carefully pour the curds and whey into a cheese-cloth-lined colander placed over a bowl so you can save the whey (which can be used in baking or soup stock). Tie the ends of the cheesecloth together and hang it over a bowl, allowing it to drain for several hours. For a firmer cheese, squeeze out most of the liquid.

4. Place the curd in a bowl and stir in your desired ferment until evenly mixed. Use immediately or store refrigerated in an airtight container. It will keep for about a week.
CHEESY QUINOA

The inspiration behind this recipe was green chile cheese grits, with quinoa substituted for the grits. Serve with eggs, or have a bowl of this protein-rich dish and forget the eggs all together. The ferment we have chosen to use here is the Green Chili Starter (page 000). This ferment adds wonderful flavor to the dish but is not at all hot. For some heat, shake on your favorite hot sauce.

- 1 cup quinoa
- 1 cup water
- 4 ounces cheddar cheese, grated
- 2 tablespoons butter
- 2 tablespoons heavy cream or kefir
- 5–6 tablespoons Green Chili Base

1. Rinse quinoa and put in a pot with the water and butter.
2. Cover the pot, bring it to a boil, then reduce heat and simmer until water is gone and quinoa is fluffy.
3. Take the pot off the heat and stir in the cheese, cream, and Green Chili Base.