

SUPER GUT

A Four-Week Plan to Reprogram Your Microbiome,
Restore Health, and Lose Weight

WILLIAM DAVIS, MD



This book is intended as a reference volume only, not as a medical manual. The information given here is designed to help you make informed decisions about your health. It is not intended as a substitute for any treatment that may have been prescribed by your doctor. If you suspect that you have a medical problem, we urge you to seek competent medical health care.

Mention of specific companies, organizations, or authorities in this book does not imply endorsement by the author or publisher, nor does mention of specific companies, organizations, or authorities imply that they endorse the book, its author, or the publisher.

Internet addresses and telephone numbers given in this book were accurate at the time it went to press.

Copyright © 2022 by William Davis, MD

Cover design by Sara Wood

Cover copyright © 2022 by Hachette Book Group, Inc.

Hachette Book Group supports the right to free expression and the value of copyright. The purpose of copyright is to encourage writers and artists to produce the creative works that enrich our culture.

The scanning, uploading, and distribution of this book without permission is a theft of the author's intellectual property. If you would like permission to use material from the book (other than for review purposes), please contact permissions@hbgusa.com. Thank you for your support of the author's rights.

Hachette Go, an imprint of Hachette Books

Hachette Book Group

1290 Avenue of the Americas

New York, NY 10104

HachetteGo.com

Facebook.com/HachetteGo

Instagram.com/HachetteGo

First Edition: February 2022

Hachette Books is a division of Hachette Book Group, Inc.

The Hachette Go and Hachette Books name and logos are trademarks of Hachette Book Group, Inc.

The publisher is not responsible for websites (or their content) that are not owned by the publisher.

Print book interior design by Linda Mark.

Library of Congress Cataloging-in-Publication Data

Names: Davis, William, 1957– author.

Title: Super gut : a four-week plan to reprogram your microbiome, restore health, and lose weight / William Davis, MD.

Description: First edition. | New York : Hachette Go, 2022. | Includes bibliographical references and index.

Identifiers: LCCN 2021035884 | ISBN 9780306846977 (hardcover) |

ISBN 9780306846953 (ebook)

Subjects: LCSH: Gastrointestinal system—Microbiology. | Health.

Classification: LCC QR171.G29 D38 2022 | DDC 612.3/2—dc23

LC record available at <https://lccn.loc.gov/2021035884>

ISBNs: 978-0-306-84697-7 (hardcover), 978-0-306-84695-3 (ebook)

Printed in the United States of America

LSC-C

10 9 8 7 6 5 4 3 2 1

*Dedicated to the memory of Professor Ilya Ilyich (Élie) Mechnikov,
biologist and keen observer, who, more than a century ago,
was the first to recognize the power of the microbiome in
health and aging, and who also was a lover of yogurt*

SUPER GUT RECIPES

YOU HAVE SURELY PERUSED MANY COOKBOOKS OVER THE YEARS and followed some of their recipes—but you’ve never seen recipes like these.

We are going to be growing various bacteria to obtain a whole range of wonderful health benefits, as well as enjoying delicious dishes that help support your efforts to beat back the monster that’s taken over your GI tract.

The recipes provided here fall into four categories:

1. **Yogurt recipes:** These recipes yield large numbers of specific species and strains of bacteria and thereby substantial health benefits.
2. **Beverage and smoothie recipes:** A smoothie is an easy way to get a wallop of prebiotic fibers as a tasty snack or meal replacement.
3. **Side dishes, main dishes, and condiments:** Various dishes that make use of ingredients that aid your efforts to reprogram your intestinal microbiome, such as spices in a delicious tea that increase the thickness and protective capabilities of your intestinal mucus lining and rosemary in baking for its ability to discourage overgrowth of *Staphylococcus aureus* and *Candida albicans*.
4. **Desserts:** Dishes that illustrate how you can make your sugar- and grain-free life delicious and fun when entertaining friends or enjoying holidays and keep the children and grandchildren happy.

A three-day menu plan and shopping list to get you started falls at the end of this recipe section.

If you can consume dairy products, you will find that they are the most forgiving, least problematic vehicle for fermentation. We may call our various fermentation efforts “yogurt,” but they are really not. FDA regulations stipulate that anything labeled “yogurt” must be fermented using not-very-exciting *Lactobacillus bulgaricus* and *Streptococcus thermophilus* species, which we are *not* using. (There’s no harm in using these traditional microbes, but I believe that we can achieve more interesting results with other species and strains.) We may call it “yogurt,” but our unique fermented foods provide health benefits more profound than the ho-hum effects of conventional yogurt, and in nutrition these foods are light-years ahead of the fancy-labeled products in the dairy section of your supermarket that are sweetened with high-fructose corn syrup and thickened with carrageenan, xanthan, and gellan gums to conceal their meager bacterial numbers and metabolites.

In addition to choosing specific microbes, we also super-power traditional yogurt-making methods by prolonging fermentation times and adding prebiotic fibers to nourish the hardworking bacteria. These additional efforts increase bacterial counts from the few millions in conventional yogurts to hundreds of billions, not uncommonly a *thousand-fold* increase. In general, the higher the bacterial count, the greater the biological effect. I have submitted a number of samples of our yogurts for bacterial counts to labs that use an automated method called flow cytometry. The most recently submitted batch of *L. reuteri* yogurt, for instance, had 262 billion microbes per half-cup serving—try getting those numbers in a commercial yogurt or probiotic supplement.

Dairy products are not without issues: lactose, casein beta A1, and whey protein being among the most potentially problematic components. Extended fermentation, however, serves to minimize potential adverse effects by maximally converting lactose to lactic acid (very little lactose remains in the yogurt, and the end result is tart from lactic acid). The accumulation of lactic acid reduces the pH to 3.5, a level that denatures, or breaks down, the casein protein, making it less immunogenic (i.e., reducing its potential to provoke immune responses). And you can minimize the effect of the whey protein that stimulates insulin release from the pancreas by pouring off the liquid whey or straining the yogurt through cheesecloth or a coffee filter

for four to six hours to yield a thicker Greek-style yogurt. (Line a colander with cheesecloth or a coffee filter, place the colander in a large bowl or pot, then pour the yogurt into the colander and cover. The whey slowly drips out of the yogurt into the bowl, and you can toss it out or use it to begin your next batch of yogurt, as the whey contains plenty of microbes.) If you are intolerant of conventional dairy, you can use A2 dairy products made from cows that produce the less-immune-stimulating casein beta A2 protein, a form that is identical to that in human breast milk. You also have the option of using goat's or sheep's milk, both also A2. Or you can use non-dairy milks such as coconut milk. I also provide recipes to ferment various foods such as salsa and hummus.

Each yogurt recipe uses one quart of dairy liquid. If you choose to use dairy, I find that organic half-and-half (50 percent cream, 50 percent whole milk) yields the best result. (Yes: We choose high-fat and high-calorie sources because we *want* fat, and calories *do not matter*. Ironically, fat is the dairy component most frequently demonized, but it is the healthiest ingredient of all in dairy.) Whole milk also works well but yields a richer end result only after you strain out the whey. You can also begin with heavy cream, but in my experience, it yields a yogurt that is too thick, almost like cream cheese. Some people, however, seem to prefer this, so it's your choice. Whatever you choose to start with, just be sure it contains no additives like gellan or xanthan gum because these will encourage clumpy separation of the yogurt into curds (solids) and whey (liquid).

After we select the bacterial species that yield the specific, often extraordinary, effects we're after, we add prebiotic fiber to further increase bacterial counts. This step also increases the thickness and richness of the final product. You can ferment without adding a source of prebiotic fiber, but the end product is thinner, less rich, and might not produce the full effect you are looking for because of lower bacterial counts. Inulin powder and raw potato starch (e.g., Bob's Red Mill brand) work best, unless you are fermenting *Bifidobacterium* species, which seem to "prefer" sources of sugar such as raw potato starch (a chain of glucose molecules) or sucrose rather than inulin. Don't worry: I have included instructions on which source of prebiotic fiber to use with each fermentation project.

You need some means of maintaining your yogurt at the recommended temperature, which varies with bacterial species. *L. reuteri*, for example,

grows best at human body temperature, 97°F–100°F (meaning that the rate of bacterial reproduction is maximized at these temperatures), while *Bacillus coagulans* “prefers” a higher temperature, between 115°F and 122°F. You are therefore best served by choosing a yogurt-making device that allows you to vary both temperature and fermentation time. Sous vide devices (basin or stick, ordinarily used to slow cook meat), some yogurt makers, and newer Instant Pots with lower temperature settings work well. (See Appendix A for a list of recommended devices.)

Don’t be overwhelmed by these fermentation projects, and don’t feel like you need to do all of them. When you are handed a menu at a restaurant, you don’t feel like you have to order every appetizer, entrée, and dessert listed—you just order the dishes you want. Likewise, view these recipes as a menu and choose the bacterial species and strains for the effects you desire. Each yogurt begins with a different starter species or strain that you need to purchase only once because you can make subsequent batches of yogurt using a tablespoon or two of a prior batch. You can use the liquid whey, solid curd, or both to start the next batch.

Feel free to experiment. People following my program frequently report new and unique effects from these foods that we did not anticipate. Some have reported, for instance, increased mental clarity with *Lactobacillus casei* Shirota yogurt, increased strength with *Lactobacillus gasseri* BNR17 yogurt, and relief from compulsive behaviors with *Bifidobacterium longum* BB536 yogurt. Because your response to each fermentation product may vary, you might learn about new benefits simply by trying new yogurts.

Don’t be discouraged if your first batch of each yogurt separates into curds (solid) and whey (watery liquid); this is typical with first batches. Subsequent batches tend to be richer and thicker. Once you obtain the thick and creamy end result, enjoy your delicious and filling yogurt with some strawberries, a bit of chia seed, and a squirt of benign noncaloric sweetener such as stevia.

SUPER GUT YOGURT RECIPES

With these unique recipes, you are going to be creating foods that have the power of miraculous drugs, but with none of the side effects. You will be

creating foods that have age-reversing and mood-elevating effects, effects that can improve physical performance for an athlete or mental performance for a student or businessperson. Calling it “yogurt” is like calling a Rolls-Royce a go-kart: it’s hardly a fair comparison. But it looks like yogurt, tastes like yogurt, even though it would not meet the FDA’s definition of yogurt—you are going to eat in style with these recipes, enjoying benefits that you may have thought were long out of reach.

For greatest effect, make a monoculture yogurt (or other fermented food), that is, ferment the food using a single bacterial species or strain because this yields the highest bacterial numbers, in the hundreds of billions per half-cup serving. If you desire less-intense effects or, as with *L. reuteri* for children or young adults, we want the benefits of the bacterial species and strains but not at the intense levels of full-strength yogurt, make a *mixed-culture* yogurt; this is when you ferment a yogurt using several species and strains (example recipe provided). Think of it this way: If you have a garden and you plant only tomatoes, watering and fertilizing your garden will yield a huge bounty of tomatoes. But if you plant tomatoes with zucchini, cucumbers, squash, and eggplant, you will have fewer tomatoes. Bacteria behave the exact same way when they compete for available resources. Remember that my flow cytometry studies of our yogurts showed bacterial counts at over two hundred billion per half-cup serving, so we have plenty of leeway to combine two, three, perhaps four species—you will have fewer numbers of each species, but the overall count should still be quite high, for example, sixty to eighty billion per strain per half-cup serving.

The first batch of each yogurt ferments from the bacterial source, for example, crushed probiotic tablets for *L. reuteri* yogurt, then you make subsequent batches from 2 tablespoons that you have saved from a prior batch, curds (solids), whey (liquid), or both. You can re-inoculate subsequent batches using additional tablets or capsules of the starting microbe, but usually there is no need because the bacteria are wonderful at proliferating and do just fine even if you do not add more organisms.

If you want to limit your reliance on dairy products or just want a change of pace, see the list of alternative fermentation vehicles toward the end of this chapter.

LACTOBACILLUS REUTERI YOGURT

LACTOBACILLUS REUTERI YOGURT IS OUR STAR YOGURT THAT CAN YIELD SPECTACULAR health effects such as smoother skin, increased skin moisture (more sebum), increased dermal collagen (fewer wrinkles), accelerated healing, and restoration of youthful muscle that, in total, amount to an age-reversing effect.^{1,2} Recall that the oxytocin boost you receive with this yogurt also increases feelings of empathy and that the colonizing effect in the upper GI tract also provides protection against SIBO or SIFO recurrences. If you are pregnant, I recommend not consuming this yogurt as a monoculture but making the *L. reuteri* mixed-culture yogurt from the recipe on page 238, which yields lower bacterial counts.

L. reuteri is the first probiotic species that I fermented. Interestingly, when I first discussed making *L. reuteri* yogurt with the producers of the Gastrus product that provides the original bacteria, they insisted that yogurt could *not* be made with it. When I told them that I had made dozens of batches (at the time; now hundreds) and that the end result was rich and thick, they were shocked. (The difference, of course, is that conventional yogurt making is typically a four-hour process that yields a watery result necessitating the addition of thickening agents, whereas I ferment for thirty-six hours and add prebiotic fiber to increase bacterial counts—no wonder they were surprised.) The Gastrus product contains the two *L. reuteri* strains, DSM 17938 and ATCC PTA 6475, we know are associated with the specific health effects I listed above. The same manufacturer also offers a product called Osfortis that contains only the 6475 strain, but at higher counts (5 billion CFUs per capsule). This single strain seems to provide most, perhaps all, of the benefits when the two strains are combined. If you use Osfortis as a starter, only one capsule is required to ferment to yogurt.

Because oxytocin receptors in the uterus of pregnant human females increase sharply in number in the days leading up to delivery, pregnant women should not consume the full-strength yogurt. A mixed-culture yogurt that restores this missing microbe is a safer way to obtain the benefits of *L. reuteri*, a microbe that all humans should have.

Note that, when *L. reuteri* is fermented alone, it prefers to ferment at human body temperature. When combined with other species that have higher temperature “preferences,” such as 115°F–122°F of *B. coagulans*, we use a temperature of around 106°F—not the ideal temperature for *B. coagulans*, but below the temp that kills *L. reuteri*, which is 109°F–110°F and higher. After all, life can be about compromise.

- 10 Gastrus tablets, crushed (or the contents of one capsule of Osfortis)
- 2 tablespoons prebiotic fiber (inulin or raw potato starch)
- 1 quart half-and-half or other liquid

Pulverize 10 Gastrus tablets by placing them in a plastic bag and crushing them with a heavy jar, thick drinking glass, or rolling pin. If in capsule form, simply open the capsule and pour into a bowl.

In a medium to large bowl, combine the probiotic, prebiotic fiber, and 2 tablespoons of half-and-half. Make a slurry to ensure the prebiotic fiber does not clump. Stir until well mixed. Stir in the remaining half-and-half. Cover lightly (e.g., with plastic wrap), place in your fermenting device, and ferment at 100°F for 36 hours. To make future batches, use 2 tablespoons of curds or whey from a prior batch.

Bacterial source: BioGaia Gastrus tablets (L. reuteri strains DSM 17938, ATCC PTA 6475) or Osfortis capsules (ATCC PTA 6475 strain only). These products are available through Amazon (www.amazon.com) and the US distributor Everidis (www.everidis.com).

BACILLUS COAGULANS YOGURT

THE GBI-30,6086 STRAIN CAN REDUCE INFLAMMATION, REDUCE ARTHRITIS pain, reduce symptoms associated with irritable bowel syndrome, and accelerate muscle recovery after strenuous exercise.^{3,4} *B. coagulans* yields a delicious milder yogurt that is less tart than *L. reuteri* yogurt. In fact, many people who have made yogurt with this strain report that it makes the most delightful and tasty yogurt they have ever had.

- 1 capsule *Bacillus coagulans* GBI-30,6086
- 2 tablespoons prebiotic fiber (inulin or raw potato starch)
- 1 quart half-and-half or other liquid

In a medium to large bowl, combine the contents of one capsule of probiotic, prebiotic fiber, and 2 tablespoons of half-and-half. Make a slurry to ensure the prebiotic fiber does not clump. Stir until well mixed. Stir in the remaining half-and-half. Cover lightly (e.g., with plastic wrap), place in your fermenting device, and ferment at 115°F–122°F for 36 hours. To make future batches, use two tablespoons of curds or whey from a prior batch.

Bacterial source: The Digestive Advantage product from Schiff is available in many major retail stores and pharmacies. Other sources of B. coagulans do not specify strain and we therefore avoid them.

LACTOBACILLUS GASSERI YOGURT

THE BNR17 STRAIN OF *L. GASSERI* CAN REDUCE WAIST SIZE BY ABOUT ONE INCH when consumed over ninety days even in the absence of any change in diet or exercise.⁵ It can also reduce symptoms of irritable bowel syndrome, reduce blood and urinary levels of oxalate, which can lead to kidney stones, and can be instrumental in protecting against SIBO or SIFO recurrences because of its vigorous bacteriocin-producing properties.

- 1 capsule *L. gasseri* BNR17
- 2 tablespoons sugar (sucrose) or prebiotic fiber (raw potato starch)
- 1 quart half-and-half or other liquid

In a medium to large bowl, combine the contents of one capsule of probiotic, the sugar, and 2 tablespoons of half-and-half. Make a slurry to ensure the sugar dissolves and the prebiotic fiber does not clump. Stir until well mixed. Stir in the remaining half-and-half. Cover lightly (e.g., with plastic wrap), place in your fermenting device, and ferment at 109°F for 36 hours. To make future batches, use two tablespoons of curds or whey from a prior batch.

Bacterial source: L. gasseri BNR17 has just recently become available from a US source, Mercola Market: www.mercolamarket.com

Look for a product called “Biothin Probiotic” with 10 billion CFUs per capsule. Use a single capsule to start your yogurt.

LACTOBACILLUS CASEI SHIROTA YOGURT

THIS STRAIN OF THE SPECIES PROVIDES UNIQUE IMMUNE SYSTEM-BOOSTING EFFECTS, particularly effective against viral respiratory illnesses.⁶ Three human clinical trials demonstrate that intake of this microbe at 100 billion CFUs per day reduces the potential for viral illnesses by 50 percent and, should you develop a viral illness, abbreviates the illness by 50 percent. Because this effect appears to require high bacterial counts and the commercial source of the bacterial strain provides only 6.5 billion CFUs per bottle (sold as a product called Yakult), our prolonged fermentation with added prebiotic fibers provides the higher numbers for this effect. (The sugar and skim milk contents of the original product are lost with fermentation.)

1 2-ounce bottle Yakult

2 tablespoons prebiotic fiber (inulin or raw potato starch)

1 quart half-and-half or other liquid

In a medium to large bowl, combine the Yakult, prebiotic fiber, and 2 tablespoons of half-and-half. Make a slurry to ensure the prebiotic fiber does not clump. Stir until well mixed. Stir in the remaining half-and-half. Cover lightly (e.g., with plastic wrap), place in your fermenting device, and ferment at 109°F for 36 hours.

Bacterial source: Yakult

You can find the Yakult product at Walmart, at Meijer, in Asian grocery stores, and at several other major retailers in the refrigerated dairy section next to the yogurts and kefir. The manufacturer provides a store locator on its website: www.yakultusa.com.

BIFIDOBACTERIUM INFANTIS YOGURT

B. INFANTIS IS A SPECIES THAT HAS BEEN LOST BY MANY MOTHERS, WHO THEREBY cannot pass it on to their newborn babies, which puts infants at a disadvantage for growth and long-term health. When this species is restored in infants as a probiotic, they have fewer bowel movements (fewer diaper changes), less colic, less eczema, less diaper rash, better sleep, and less risk for asthma, type 1 diabetes, and other autoimmune disorders later in childhood.⁷

However, instead of dosing an infant with a probiotic, I advocate a better strategy: Make yogurt with the EVC001 strain of this species that *the pregnant mother can consume* and thereby pass *B. infantis* on to the newborn with passage through the birth canal or through breastfeeding. This may provide advantage in that moms can deliver this species in the context of a broader microbiome made more diverse by restoration of *B. infantis* prior to delivery. It also saves money because the yogurt can be propagated over and over again starting with a single sachet. (The Evivo product source of this microbe comes in a sachet rather than a capsule.) The probiotic can also be given to the baby, of course, to ensure that the microbe is present.

Because this microbe is somewhat slow growing, we extend fermentation time to between 36 and 40 hours. Also, *B. infantis* is unable to metabolize inulin and will not ferment as vigorously when inulin is used as the prebiotic fiber, so choose raw potato starch or sucrose as your microbe feed.

1 envelope Evivo *B. infantis* EVC001 (8 billion CFUs)

2 tablespoons sugar (sucrose) or prebiotic fiber (raw potato starch)

1 quart half-and-half

In a medium to large bowl, combine the contents of one envelope of Evivo, the sugar, and 2 tablespoons of half-and-half. Make a slurry to ensure the sugar dissolves or the prebiotic fiber does not clump. Stir until well mixed. Stir in the remaining half-and-half. Cover lightly (e.g., with plastic wrap), place in your fermenting device, and

ferment at 100°F for 36–40 hours. To make future batches, use 2 tablespoons of curds or whey from a prior batch.

Bacterial source: Evivo

Obtain from the manufacturer: evivo.com

LACTOBACILLUS HELVETICUS AND BIFIDOBACTERIUM LONGUM YOGURT

THIS COMBINATION OF SPECIES HAS BEEN SHOWN TO REDUCE ANXIETY AND LIFT mood, contributing to a reversal of depression.⁸ Once again, we put our microbes to work with prolonged fermentation and prebiotic fibers to obtain greater bacterial numbers for bigger and faster effects. This combination may propagate a little more slowly than other species, so we ferment at 100°F for 36 to 40 hours. Not everyone experiences the lift in mood, but those who do can experience marked effects.

1 capsule Mood Probiotic

2 tablespoons sugar (sucrose) or prebiotic fiber (raw potato starch)

1 quart half-and-half

In a medium to large bowl, empty the contents of one capsule; add the sugar and 2 tablespoons of half-and-half. Make a slurry to ensure the sugar dissolves or the prebiotic fiber does not clump. Stir until well mixed. Stir in the remaining half-and-half or other liquid. Cover lightly (e.g., with plastic wrap), place in your fermenting device, and ferment at 100°F for 36–40 hours. To make future batches, use 2 tablespoons of curds or whey from a prior batch.

*Bacterial source: InnovixLabs Mood Probiotic or Life Extension
Florassist Mood Improve*

Obtain from the manufacturer: InnovixLabs.com

Also available from Life Extension: www.lifeextension.com

MIXED-CULTURE *L. REUTERI* YOGURT

THIS IS HOW TO MAKE YOGURT FOR CHILDREN OR PREGNANT MOTHERS IN WHOM we don't want to boost oxytocin to high levels. We ferment *L. reuteri* with other species. Everyone should enjoy the health benefits of *L. reuteri* intestinal colonization, and we should have received it at birth from our mothers, but if that did not happen, a mixed-culture yogurt like this one can restore this species in a gentler way for children and pregnant women. This keystone species has the ability to colonize the upper GI tract and enhances healing and boosts oxytocin levels so that we can enjoy feelings of greater empathy.

We start with either 2 tablespoons of *L. reuteri* yogurt from a prior batch or 10 crushed tablets of *L. reuteri* probiotic. We then combine that with 2 tablespoons of any store-bought yogurt that contains live cultures or a starting culture you purchased. The Oui brand of yogurt is the simplest, containing only *Lactobacillus bulgaricus* and *Streptococcus thermophilus*. Culturing these two species with *L. reuteri* yields an absolutely delicious, nontart end result that even kids will enjoy. Other yogurt brands include additional strains. Different bacterial mixtures can yield subtle differences in flavor. Alternatively, you can make a mixed-culture yogurt by fermenting *L. reuteri* in combination with 2 tablespoons of one or more of the other yogurts you have fermented or their starter preparation (e.g., one capsule of *B. coagulans* or *B. infantis*).

- 2 tablespoons *L. reuteri* yogurt or 10 crushed Gastrus tablets
- 2 tablespoons live-culture store-bought yogurt or 2 tablespoons of each of your other yogurts or 1 capsule of each starting microbe
- 2 tablespoons prebiotic fiber (inulin or raw potato starch)
- 1 quart half-and-half or other liquid

In a medium to large bowl, combine 2 tablespoons of a prior batch of *L. reuteri* yogurt, 2 tablespoons each of other live-culture yogurts (or capsules), prebiotic fiber, and 2 tablespoons of half-and-half. Make a slurry to ensure the prebiotic fiber does not clump. Stir until well mixed. Stir in the remaining half-and-half or other liquid.

Cover lightly (e.g., with plastic wrap), place in your fermenting device, and ferment at 106°F for 36 hours. To make future batches, use 2 tablespoons of curds or whey from a prior batch.

HIGH-POTENCY PROBIOTIC YOGURT

THIS IS HOW TO CREATE A HIGH-POTENCY PROBIOTIC YOGURT STARTING WITH either a commercial probiotic or a commercial kefir that saves you money while providing super-duper-high bacterial counts with all the benefits of commercially produced high-potency probiotics. I paid around \$4 for each of the commercial kefirs I used. A couple tablespoons of store-bought kefir can yield months and months of probiotic, saving you a lot of money on costly commercial probiotics.

Start with either a capsule of probiotic with at least 2 billion CFUs of one or more species or 2 tablespoons of a commercial kefir, which typically contain ten or more species. You can also combine different brands of kefir that include different bacterial species to increase the number of fermenting species.

- 1 capsule probiotic or 2 tablespoons of kefir (if combining kefirs, use 2 tablespoons of each product)
- 2 tablespoons sugar (sucrose) or prebiotic fiber (inulin or raw potato starch)
- 1 quart half-and-half

In a medium-sized bowl, combine the contents of the probiotic capsule with the sugar and 2 tablespoons of organic half-and-half. Make a slurry to ensure the sugar dissolves or the prebiotic fiber does not clump. Stir until well mixed. Stir in the remaining half-and-half. Cover lightly (e.g., with plastic wrap), place in your fermenting device, and ferment at 106°F for 36 hours. To make future batches, use 2 tablespoons of curds or whey from a prior batch.

The end result will be thicker than the original kefir, given the prolonged fermentation time, more like yogurt in consistency and no longer the thin, drinkable liquid of regular kefir.

SUPER GUT SIBO YOGURT

MY TEAM AND I ARE EXPLORING WHETHER A CAREFULLY CURATED COLLECTION of probiotic species and strains, chosen for their positive effects against pathogenic species (H_2 - and possibly methane-producing varieties), can be used to push back SIBO. Choosing species and strains capable of colonizing the upper GI tract and producing bacteriocins, for instance, make these species more likely to be successful in thwarting SIBO species. And we can now track success or failure by monitoring breath gases after the prebiotic fiber challenge. Even though our experience with curated yogurts is preliminary, I share this benign strategy with you in case you are nervous about making the leap to using herbal or conventional antibiotics against your SIBO-related symptoms because a growing number of people have had success with this route.

Rather than fermenting three different species separately, for Super Gut SIBO Yogurt we ferment all three together to generate our potentially anti-SIBO mix of probiotic species. This process limits the resulting microbial counts of *L. gasseri*, which preliminary experience suggests is quite potent, so that we do not induce an excessive die-off reaction too quickly.

To start this ferment, you can use the raw probiotic products or 1–2 tablespoons of yogurt made with each individual species or a couple of tablespoons that you saved from a prior batch of this mixed yogurt.

- 10 BioGaia Gastrus tablets, crushed (total 2 billion CFUs), or 2 tablespoons of *L. reuteri* yogurt (curds and/or whey)
- 1 capsule *Lactobacillus gasseri* BNR17 (10 billion CFUs), or 2 tablespoons of *L. gasseri* yogurt (curds and/or whey)
- 1 capsule *Bacillus coagulans* GBI-30,6086 (2 billion CFUs), or 2 tablespoons of *B. coagulans* yogurt (curds and/or whey)
- 2 tablespoons prebiotic fiber (inulin or raw potato starch)
- 1 quart half-and-half or other liquid

In a medium-sized bowl, combine the starting probiotics, prebiotic fiber, and 2 tablespoons of organic half-and-half. Make a slurry to ensure the prebiotic fiber does not clump. Stir until well mixed.

Stir in the remaining half-and-half. Cover lightly (e.g., with plastic wrap), place in your fermenting device, and ferment at 106°F for 36 hours. To make future batches, use 2 tablespoons of curds or whey from a prior batch.

WHAT CAN WE FERMENT BESIDES DAIRY?

The extended fermentation method we use for our yogurts minimizes the problematic components of dairy products, reducing, for instance, lactose to lactic acid and denaturing casein in the resulting low-pH product. Even so, many people are interested in either minimizing or avoiding dairy products altogether. Thankfully, a number of other foods are suitable for fermentation.

Some starting foods are rich in sugar, such as mangos and bananas, but bacteria consume sugar in the process of fermentation, especially during the prolonged fermentation times of 48–72 hours that I suggest (longer than for dairy). Long fermentation times not only reduce sugar content dramatically but also increase bacterial populations exponentially.

You can purchase many of the starting products prepared or you can make them yourself. Fermenting salsa, for instance, can begin with either store-bought salsa or a salsa you made yourself in your food processor or food chopper. If you choose to start with store-bought products, be sure to choose products that contain no preservatives, emulsifiers, or other undesirable ingredients because these additives not only are not good for you but also can block or alter the fermentation process.

As with dairy fermentation, choose which bacterial species to use depending on the effect you desire, e.g., *Bacillus coagulans* probiotic capsules or some whey from a prior batch of yogurt to start the process..

COCONUT MILK

CHOOSE A CANNED COCONUT MILK (NEVER THE THINNER PRODUCTS IN CARTONS) that contains nothing but coconut and water, with no thickeners or mixing agents such as xanthan gum or gellan gum—guar gum is okay,

however—because these additives provoke separation upon fermentation. Because coconut milk (sometimes called coconut cream) has the tendency to separate into water and oil, several additional steps are required to obtain a uniform end result. Unlike dairy, which we do not preheat (if it's already pasteurized or ultra-pasteurized), we do preheat coconut milk. The key is to use the prebiotic fiber and the thickener guar gum to keep the milk from separating. Don't let the use of sugar in this recipe alarm you—the microbes consume the sugar and there should be little to none left after fermentation.

Following is the recipe for making coconut milk yogurt with *L. reuteri* as an illustration of the process; if you choose another species or a mixed culture, use the same temperature settings as specified in the dairy-based yogurt recipes for the included strains. Also, be sure to ferment coconut milk yogurt for 48 hours to obtain a thicker, richer end result.

Note that the blending step *precedes* addition of the bacteria because the blending process can kill microbes. We therefore add microbes as the last step before fermentation.

MAKES 2 SERVINGS

- 1 (13.5-ounce) can coconut milk
- $\frac{3}{4}$ teaspoon guar gum
- 2 tablespoons sugar
- 1 tablespoon raw potato starch
- 1–2 tablespoons *L. reuteri* yogurt, curds and/or whey, or
- 10 Gastrus tablets, crushed

In a small or medium-sized saucepan, heat coconut milk over medium heat to 180°F or until it just begins to boil; remove from heat. Allow to cool 5 minutes.

Add guar gum, sugar, and potato starch to the cooled coconut milk and blend with a stick blender or pour these ingredients into a blender; blend for a minimum of 1 minute or until the mixture thickens to the approximate thickness of heavy cream.

Allow the mixture to cool to 100°F (or room temperature), then mix in the *L. reuteri* yogurt. Ferment for 48 hours at 100°F.

HUMMUS

CHICKPEAS WITH TAHINI (FROM SESAME SEEDS) PUREED INTO HUMMUS MAKES A wonderful vehicle for fermentation. The end result tastes a bit different from the original unfermented hummus, with a cheesy scent and flavor. It therefore makes a tasty spread for sandwiches or a dip for jicama and other vegetables.

I find it necessary to dilute hummus by half with water before fermentation: add a half cup of water for every cup of hummus. Ferment for 48 hours. Follow the same temperature settings used in the dairy-based recipes, which vary with the microbe you choose.

SALSA

SALSA DEVELOPS A LIGHT EFFERVESCENCE WHEN FERMENTED. SALSA VERDE also ferments nicely. Ferment for 48–72 hours. Follow the same temperature settings used in the dairy-based recipes, which vary with the microbe you choose.

PUREED FRUITS, SWEET POTATOES

STRAWBERRIES, BLUEBERRIES, RASPBERRIES, BLACKBERRIES, BANANAS, MANGOES, and peaches are among the fruits that you can puree and put to work fermenting with chosen microbial species. You can also purchase fruits that are already pureed, but choose products without added sugar because the naturally occurring sugar in fruit is more than enough to support fermentation.

Ferment purees for at least 72 hours to maximally reduce sugar. You can also ferment baby foods such as pureed carrots, an excellent vehicle for fermenting with the *Bifidobacterium infantis* EVC001 strain, which provides so many benefits to babies, as discussed in the yogurt recipe for this microbe. Pureed sweet potatoes are also an especially fermentation-friendly food. Follow the same temperature settings used in the dairy-based recipes, which vary with the microbe you choose.

BEVERAGES AND SMOOTHIES

STRAWBERRY, CARROT, AND DANDELION GREENS PREBIOTIC SMOOTHIE

THE BANANA, DANDELION GREENS, AND CARROT IN THIS TASTY SMOOTHIE ADD to your daily intake of prebiotic fiber. You can, of course, obtain even more prebiotic fiber by adding a teaspoon of inulin or acacia fiber.

MAKES 1 SMOOTHIE

- 1 medium green banana or 1 medium raw peeled white potato
- 1 cup fresh dandelion greens
- 1 medium carrot, coarsely sliced
- ½ cup strawberries, fresh or frozen
- 1 cup water
- Sweetener equivalent to 1 tablespoon sugar
- 1 teaspoon of powdered inulin or acacia fiber (optional)

If using green banana, skin and chop it coarsely. It is easy to use a knife to cut the skin lengthwise, then scoop out the pulp. If using potato, chop it coarsely. Place the banana in a blender followed by the dandelion greens, carrot, strawberries, water, sweetener, and optional prebiotic fiber. Blend until well mixed and the banana has been liquefied. Serve immediately.

MATCHA STRAWBERRY KEY LIME SMOOTHIE

MATCHA GREEN TEA IS NOT THE USUAL TEA MADE BY STEEPING GREEN TEA LEAVES in water but is the leaves themselves, finely ground, which dissolve into the water. Since you consume the actual leaves, matcha is therefore a

highly concentrated source of green tea polyphenols, which cross-link the proteins in the intestinal mucus barrier, especially helpful for anyone who has been diagnosed with any intestinal inflammatory disorder. You don't have to have ulcerative colitis, of course, to enjoy this smoothie, which provides other health benefits from green tea catechins, such as modest weight loss. And, of course, don't sweat the carbs from the banana because a green, unripe banana has zero carbs but plenty of prebiotic fiber.

MAKES 1 SERVING

- 1 cup water
- 2 tablespoons key lime juice (bottled or fresh-squeezed)
- 1 green, unripe banana, coarsely chopped
- Sweetener equivalent to 1 tablespoon sugar
- 3–4 strawberries, fresh or frozen
- 1 teaspoon matcha green tea powder
- 1 teaspoon of powdered inulin or acacia fiber (optional)

In a blender, combine water, key lime juice, banana, sweetener, strawberries, matcha powder, and optional prebiotic fiber and blend until well mixed. Serve as is or on ice.

GINGER SNAP SMOOTHIE

HERE IS AN OPTION FOR OBTAINING THE ESSENTIAL OILS WE USE TO REDUCE intestinal fungal populations disguised as a Ginger Snap Smoothie. Recall that when you are just starting out using essential oils, you start with minimal quantities of the cinnamon and clove oils, no more than 1–2 drops of each. You can increase to a maximum of 5–6 drops over several weeks.

- 1 cup water
- 1 teaspoon ground cinnamon

½ teaspoon ground ginger
1–2 drops cinnamon bark essential oil
1–2 drops clove essential oil
½ teaspoon ground nutmeg
1 green, unripe banana, coarsely chopped
Sweetener equivalent to 1 tablespoon sugar
1 teaspoon of powdered inulin or acacia fiber (optional)

In a blender, combine water, cinnamon, ginger, cinnamon bark and clove oils, nutmeg, banana, sweetener, and optional additional prebiotic fiber and blend until well mixed.

CLOVE GREEN TEA

HERE'S A MUCUS-BUILDING POWERHOUSE OF A RECIPE, SO SIMPLE YET PACKING several intestinal health advantages into a simple cup of tea. Use this tea to help repair, rebuild, or maintain your intestinal mucus barrier and as part of your dysbiosis/SIBO/SIFO management program because it may make the journey smoother. This tea combines the mucus-increasing effect of eugenol oil from cloves, the mucus protein cross-linking effect of green tea catechins, and the *Akkermansia* growth-stimulating effects of fructooligosaccharides (FOS).

Whole cloves, rather than ground cloves, work best in this tea. Ground cloves include too many solids that cannot be separated from the eugenol, so if you filter the tea, you are removing much of the beneficial eugenol.

Whole cloves, on the other hand, retain their ingredients well, so I have found that you can reuse whole cloves three or four times without sacrificing quality.

Choose a green tea, preferably organic, that is high in green tea catechin content for maximum benefit. Matcha teas are high, as is tea brewed from Trader Joe's Organic Green Tea, Pique Tea Crystals, Newman's Own Organic Green Tea, and Numi Organic Gunpowder Green Tea.

Optionally, you can sweeten the tea with allulose, which has the properties of prebiotic fiber. (FOS and allulose both readily dissolve in tea, unlike some other powdered prebiotics.)

For added flavor, add a cinnamon stick to the tea upon serving.

MAKES 2 SERVINGS

2 cups water
1 tablespoon whole cloves
1 teabag green tea
1 teaspoon FOS powder
2 teaspoons allulose (optional)
Additional sweetener to taste
1 cinnamon stick (optional)

In a small saucepan, combine the water and cloves and bring to a boil. Reduce the heat and cover to maintain a low simmer for 10 minutes.

Add the teabag in the last 1–2 minutes of simmering, then remove from heat. Discard teabag.

Stir in the FOS, optional allulose, other sweetener, and optional cinnamon stick, and serve or sip throughout the day.

MATCHA, MINT, AND BLUEBERRY FROZEN SMOOTHIE

HERE'S ANOTHER WAY TO PUT YOUR YOGURTS TO WORK WHILE YOU OBTAIN THE mucus-strengthening effect of green tea catechins, especially potent in matcha green tea. Blueberry flavonoids add further to the benefits of this smoothie by boosting *Akkermansia*. We achieve all this while enjoying a drinkable frozen smoothie that, of course, does not rely on emulsifiers that wreak havoc on intestinal health.

In this recipe, we minimize the use of a mechanical blender because forceful agitation kills probiotic microbes. Once you have added the yogurt to the mix, pulse the blender as little as possible, just enough to mix the ingredients.

Choose the yogurt that provides the effects you desire, for example, *L. helveticus* and *B. longum* to boost mood or reduce anxiety, or *L. reuteri* to

increase empathy and smooth skin. Whereas probiotic species are killed by excessive heat, they survive just fine in the freezer.

MAKES 2 SERVINGS

- 1 teaspoon matcha tea powder
- 7–8 mint leaves, coarsely chopped, or ½ teaspoon mint extract
- 1 cup fresh or frozen blueberries
- ½ cup cold water
- Sweetener equivalent to 1½ tablespoons sugar
- 1 teaspoon inulin/FOS, acacia powder, or other prebiotic powder (optional)
- 1½ cups your choice of yogurt

In a blender, combine matcha tea, mint, blueberries, water, sweetener, and optional prebiotic fiber and blend until mixed. Use a spatula or spoon to release any frozen material from the sides of the blender.

Add yogurt and pulse briefly, just enough to mix all ingredients. If the smoothie is too thin, allow it to set in the freezer for 20–30 minutes before serving.

MOCHA MINT KEFIR

YOU'LL LOVE THIS MOCHA MINT KEFIR—IT'S ALMOST LIKE DRINKING MELTED ICE cream. Kefirs are among the richest sources of microbial species. Despite the lack of information on which strains are included, adding kefir with its multiple species can still be a helpful part of your microbiome-building program.

Use either commercial kefir or a kefir you made yourself using a commercial kefir or kefir starter.

MAKES 2 SERVINGS

- 2 cups kefir
- 1 teaspoon instant coffee granules
- 1 tablespoon unsweetened cocoa powder
- ½ teaspoon mint extract
- Sweetener equivalent to 1 tablespoon sugar

In a shaker, combine kefir, coffee, cocoa, mint, and sweetener and shake vigorously until well mixed. Serve cold or at room temperature.

GINGERBREAD COFFEE

HERE IS A WAY TO ENJOY COFFEE THAT WARMS YOUR INSIDES ON AN AUTUMN or winter morning while providing the potent mucus-increasing effects of cloves and the modest positive microbiome effects of cinnamon and ginger. If you are embarking on a SIFO-eradicating effort, this is a good opportunity to add 1–2 drops of cinnamon bark oil and/or a drop of clove oil.

MAKES 2 SERVINGS

1 teaspoon ground cinnamon
½ teaspoon ground cloves
Dash ground nutmeg
½ teaspoon ground ginger
1 teaspoon instant coffee granules
Sweetener equivalent to 1 tablespoon sugar or to taste
16 ounces boiling water

In a small to medium-sized saucepan, combine cinnamon, cloves, nutmeg, ginger, coffee, sweetener, and water. Bring to boil, then divide into two coffee mugs.

You may need to stir occasionally during consumption to keep the nondissolvable components suspended.

RASPBERRY LIME YOGURT SMOOTHIE FOR SMOOTHER SKIN

HERE'S A WAY TO PUT YOUR *L. REUTERI* YOGURT COMBINED WITH COLLAGEN hydrolysates to work for smoother skin.

MAKES 1 SERVING

1 cup raspberries
7–8 mint leaves, coarsely chopped, or ½ teaspoon mint extract

1 tablespoon collagen hydrolysates
½ cup water
Sweetener equivalent to 1 tablespoon sugar
1 cup *L. reuteri* yogurt

In a blender, combine raspberries, mint, collagen, water, and sweetener and blend until pureed. Add the yogurt and pulse very briefly, just enough to mix, or use a spoon to mix in the yogurt. Serve immediately.

SMALL DISHES, SIDE DISHES, AND CONDIMENTS

SUPER GUT TZATZIKI

THIS TRADITIONAL GREEK AND MIDDLE EASTERN DISH CAN BE USED AS A SAUCE or a dip or to liven up lamb, kabobs, roasted veggies, or souvlaki for an authentic Greek experience.

Our version of tzatziki comes with added benefits, depending on which yogurt you include. If you choose to make this recipe with *L. gasseri* yogurt, for instance, you may enjoy reduced stress and a reduction in waist size while also increasing healthy *Akkermansia* populations with the olive oil and garlic. Tzatziki is best consumed within 72 hours.

MAKES ABOUT 3½ CUPS

1 medium cucumber
2 cups homemade yogurt (your choice of variety)
4 tablespoons extra-virgin olive oil
3 cloves garlic, minced or crushed
2 tablespoons lemon juice, freshly squeezed or bottled
2 tablespoons dill or mint, chopped
½ teaspoon sea salt

Grate or chop the cucumber into a colander that is set in a large bowl. Allow to sit for 30 minutes, stirring occasionally, to release water.

Meanwhile, in a medium bowl, combine yogurt, olive oil, garlic, lemon juice, dill, and salt. After the cucumber is drained, stir it in and mix thoroughly.

MOROCCAN ROASTED VEGETABLES

HERE'S A FRAGRANT MIX OF VEGETABLES AND SPICES THAT CAN SERVE AS A MAIN dish or side dish.

The onion, turnip, and garlic add a few grams of prebiotic fiber while the mushrooms provide prebiotic-like polysaccharides. Turmeric benefits the intestinal lining, and eggplant and cumin contribute polyphenols.

MAKES 6 SERVINGS

1 eggplant, sliced and quartered
1 large onion (yellow, white, or red), halved and sliced
1 turnip, sliced
8 ounces white button mushrooms, halved
½ cup extra-virgin olive oil
2 tablespoons garlic paste
1 teaspoon ground turmeric
1 teaspoon ground cumin
1 teaspoon ground cinnamon
1 teaspoon onion powder
Sea salt to taste

Preheat oven to 375°F.

On a large baking sheet, combine the eggplant, onion, turnip, and mushrooms. Drizzle olive oil over the vegetables, then mix in the garlic paste. Sprinkle on turmeric, cumin, cinnamon, onion powder, and salt. Toss the mixture to mix the ingredients well.

Roast for 30 minutes.

HERBED FOCACCIA BREAD

HERE'S AN OLD FAVORITE AMONG READERS OF MY **WHEAT BELLY** BOOKS AND cookbooks, a fragrant, delicious, and virtually foolproof focaccia-style flatbread that we make with almond flour. I've tweaked the recipe to include a greater quantity of herbs for their bowel flora benefits.

You can use this flatbread as a sandwich bread, but my favorite way to eat it is to simply dip it into a high-quality extra-virgin olive oil seasoned with coarse salt.

MAKES 6 FLATBREADS

- 1 cup shredded mozzarella or other cheese
- 3 cups almond meal/flour
- ¼ cup ground psyllium seed
- 1½ teaspoons sea salt or kosher salt, divided
- 1 teaspoon onion powder
- 1 tablespoon garlic paste or 5 cloves garlic, minced
- 1 tablespoon rosemary, chopped, or 1½ teaspoons dried rosemary
- 1 tablespoon oregano, chopped (stems removed), or 1½ teaspoons dried oregano
- ½ cup black or kalamata olives, diced
- ¼ cup sun-dried tomatoes (preferably in oil, or as dried and presoftened in hot water), diced
- 2 large eggs
- ½ cup extra-virgin olive oil, divided

Preheat oven to 375°F.

In medium bowl, combine cheese, almond meal/flour, psyllium, ½ teaspoon salt, onion powder, garlic, rosemary, oregano, olives, and sun-dried tomatoes and mix well. Set aside.

In a small bowl, whisk the eggs, then stir in all but 1 tablespoon of olive oil. Pour the egg mixture into the almond meal/flour mixture and mix thoroughly.

Grease an 11x17-inch shallow baking pan. Place the dough onto the pan and shape it into a large rectangle by hand or by covering with parchment paper and using a roller or other flat cylindrical

object to achieve a ½-inch thickness. Dough may not fill the entire pan.

Bake for 12 minutes. Remove from the oven. Use the blunt handle of a spoon or other small rounded instrument to make small depressions in the surface of the dough every inch or so. Brush the surface with the remaining olive oil and sprinkle with sea salt or kosher salt. Return the pan to the oven for an additional 8–10 minutes until the flatbread is lightly browned.

Use a pizza cutter to slice the flatbread into six pieces. Remove slices from the pan carefully using a pancake flipper.

HOT CHILI FRIES

SOME PEOPLE MISS FRENCH FRIES. SLICED TURNIPS ACTUALLY MAKE A PRETTY good substitute.

Here's a way to combine prebiotic fiber-rich, low-carb turnips in a baked version of fries that you can spice up by dipping in a hot chili sauce for the microbiome-molding benefits of capsaicin. You can further boost capsaicin content by adding your choice of chili pepper to the dry mix. (I used ancho chili powder made from poblano peppers. If you're using a very hot pepper, such as cayenne, cut back to taste, for example, use only a ¼–½ teaspoon.)

MAKES 2 SERVINGS

FRIES:

- 2 teaspoons sea salt
- 1 tablespoon onion powder
- 2 teaspoons dried chili pepper powder (e.g., ancho chili powder)
- 2 tablespoons grated Parmesan cheese
- ¼ cup extra-virgin olive oil
- 2 turnips, sliced into ¼- to ½-inch-thick pieces

SAUCE:

- 2 tablespoons hot chili sauce
- 1 tablespoon melted butter

Preheat oven to 425°F. Line a large baking sheet with parchment paper.

In a large bowl, combine salt, onion powder, chili pepper powder, and Parmesan cheese and mix together. Pour in olive oil and mix.

Add sliced turnips to the mixture and toss to coat thoroughly.

Spread the turnip slices one-layer deep on the lined baking sheet. Bake for 35–40 minutes or until fries are slightly crispy.

In a small bowl, combine chili sauce with butter and mix.

CURRIED CAULIFLOWER WITH PEAS

MANY PEOPLE WHO LIMIT THEIR CARBS AVOID PEAS, BUT PEAS ARE NOT TOO TERRIBLY high in carbs, with 14 grams net carbs per cup, while they provide 3–5 grams of prebiotic fiber. The galactooligosaccharide and amylose prebiotic fibers in peas add to your daily intake, along with the modest contributions made by the cauliflower and onion. The turmeric in the curry powder provides intestinal healing effects.

MAKES 4 SERVINGS

3 tablespoons butter
1 medium onion, chopped
4 cups riced cauliflower
1 cup frozen peas
1 (13.5-ounce) can coconut milk
2 tablespoons curry powder
Sea salt and black pepper to taste
¼ cup cilantro, chopped (optional)

In a large skillet over medium-high heat, melt the butter, then add the onion, cauliflower, and peas, stirring frequently until the onion is translucent and the cauliflower is tender, for 5–7 minutes.

Stir in the coconut milk, curry powder, salt, and pepper. Simmer for another two minutes, then remove from heat. Serve topped with cilantro.

CREAM OF MUSHROOM SOUP

YOU'LL LOVE THE EARTHY MIX OF FLAVORS IN THIS VERSION OF AN OLD-TIME favorite, tweaked to offer more prebiotic fiber and microbiome-balancing benefit. For you cilantro fans, this soup is a perfect match for the herb, which has modest antifungal properties.

Choose portabella or cremini mushrooms rather than white buttons for a slightly deeper flavor.

MAKES 8 SERVINGS

- ¼ cup extra-virgin olive oil or butter
- 1 onion, chopped
- 1 leek, white stem, halved and sliced
- 4 cloves garlic, minced
- 16 ounces white button mushrooms (or portabella or cremini), sliced
- 1 teaspoon ground turmeric
- 1 teaspoon ground cumin
- 1 tablespoon fresh thyme, stems removed and finely chopped, or ½ tablespoon dried thyme
- 1 teaspoon sea salt or to taste
- ½ teaspoon ground black pepper
- 1 (13.5-ounce) can coconut milk
- 4 cups chicken or vegetable stock
- ¼ cup cilantro, chopped (optional)

In a large skillet over medium-high heat, cook oil, onion, leeks, and garlic until the onion is translucent, about 3 minutes.

Stir in the mushrooms, and stir occasionally until softened, about 5 minutes.

Stir in turmeric, cumin, thyme, salt, and pepper. Add coconut milk and stock. Bring to a slow boil, then reduce the heat, cover, and simmer for 3 minutes. Remove from heat.

Ladle the mixture into a blender and blend until smooth (in batches, if necessary). Serve with cilantro sprinkled over top (optional).

FERMENTED ROASTED PEPPERS

ROASTED PEPPERS ARE TASTY TO BEGIN WITH. HERE IS HOW TO INCREASE THEIR tastiness while using them as a vehicle for fermenting your choice of probiotic microbe. You could begin with store-bought roasted peppers, but beware of those that contain preservatives, which have antibacterial properties. For this reason, you will have better luck roasting the peppers yourself for this recipe.

You will find that peppers are among the easiest vegetables to ferment because, unlike many other veggies, peppers sink to the bottom of the brine, obviating the need for a weight to keep them submerged.

Choose your microbe for the effect you desire, such as *B. longum* for reduction of anxiety or *Bacillus coagulans* for accelerated recovery after strenuous exercise or *L. reuteri* for youthful skin and muscle tone. You can begin with the contents of a probiotic capsule or whey from a batch of homemade yogurt.

MAKES APPROXIMATELY 4 CUPS

- 4 bell peppers (any color)
- 1 quart filtered or distilled water
- 1 tablespoon noniodized salt
- 1 tablespoon peppercorns
- 1 tablespoon whole coriander seeds
- 1 bay leaf
- ¼ cup white wine vinegar
- Microbe of your choice from a probiotic capsule or 1 tablespoon of whey from your choice of yogurt

Preheat oven to 400°F.

Place the whole peppers on a baking sheet and roast for 15 minutes. Turn peppers and roast for an additional 15 minutes. Remove the peppers from the oven and allow to cool. Remove the seeds and stems, gently rub off the charred skins, then slice the peppers into strips.

In a jar you use for fermentation, combine water, salt, peppercorns, coriander, and bay leaf. Add the peppers, ensuring they are covered by the liquid, and your choice of microbe, and ferment for a minimum of 72 hours in your fermentation device to maintain the temperature appropriate for the microbe included. If your fermentation vessel is too large for your fermentation device, you can divide into several smaller containers. (See the yogurt recipes earlier in this chapter for the temperature appropriate for each species.)

After fermentation, add $\frac{1}{4}$ cup vinegar, then refrigerate. Peppers will keep for at least 4 weeks in the refrigerator.

ROSEMARY TURNIPS

BEFORE YOU TURN YOUR NOSE UP AT THE THOUGHT OF EATING TURNIPS, GIVE this tasty and healthier modification of Rosemary Potatoes a try. Turnips are much lower in carbohydrates than potatoes, thereby not adding to your waistline like baked potatoes do. They're also a great vehicle for the microbiome benefits of rosemary and olive oil with a little onion thrown in.

MAKES 4 SERVINGS

2 pounds turnips, cut into $\frac{1}{2}$ -inch cubes
 $\frac{1}{4}$ cup extra-virgin olive oil
1 tablespoon fresh rosemary, finely chopped, or $1\frac{1}{2}$ teaspoons dried rosemary
1 teaspoon sea salt
1 teaspoon onion powder
 $\frac{1}{2}$ teaspoon ground black pepper

Preheat oven to 400°F.

In a large bowl, combine cubed turnips, olive oil, rosemary, salt, onion powder, and black pepper, and toss to mix thoroughly.

Spread the mixture on a baking sheet and roast for 40 minutes or until lightly browned.

DANDELION GREENS AND RAW POTATO SALAD WITH AVOCADO LIME DRESSING

THIS RECIPE PACKS A LOT OF HEALTH BENEFITS INTO A SIMPLE SALAD: PREBIOTIC fiber from dandelion greens, raw potato, onion, and garlic; polysaccharide prebiotics from mushrooms; pectin fiber from avocado; and the antibacterial effects of cilantro. The Avocado Lime Dressing is best consumed within 48 hours of preparation.

MAKES 4 SERVINGS AS MAIN DISH OR 6 AS A SIDE; MAKES APPROXIMATELY 2 CUPS

SALAD:

- 8 ounces dandelion greens
- 1 medium raw white potato, quartered and thinly sliced
- 1 red onion, halved and thinly sliced
- 4 ounces white button mushrooms, sliced
- 4 hard-boiled eggs, sliced
- 5–6 strips bacon, cooked, drained, and broken or chopped into pieces

In a large bowl, combine the dandelion greens, potato, onion, mushrooms, eggs, and bacon. Toss and top with dressing (below).

AVOCADO LIME DRESSING:

- 2 medium avocados, pitted, skin removed
- $\frac{1}{2}$ cup extra-virgin olive oil
- $\frac{1}{4}$ cup white wine vinegar
- $\frac{1}{4}$ cup fresh cilantro, coarsely chopped
- 1 clove garlic, minced, or 1 teaspoon dried garlic powder
- Juice of one small lime
- $\frac{1}{2}$ teaspoon salt
- Sweetener equivalent to 1 tablespoon sugar
- $\frac{3}{4}$ cup water

In a blender or food processor, combine the avocado, oil, vinegar, cilantro, garlic, lime juice, salt, sweetener, and water. Blend or process until uniformly mixed. Use immediately or store in an airtight container in the refrigerator.

SPICY GARLIC PICKLES

THIS SIMPLE PICKLE RECIPE ILLUSTRATES HOW TO FERMENT VEGETABLES. Although you can begin the fermentation process by adding a teaspoon of whey recovered from one of your yogurt recipes, in this recipe we put to work the microbes that naturally populate the outer surface of the vegetable. The key is to keep the veggies submerged beneath the surface of the liquid, out of the air.

These pickles require two or more weeks for full fermentation. You can judge when they are done by tasting: fully fermented pickles should be modestly tart.

- 6 cloves garlic, sliced in half
- 2 green onions, sliced
- 2 teaspoons whole mustard seed
- 1 tablespoon whole peppercorns
- 1 tablespoon whole coriander seed
- 1 sprig fresh oregano
- 4 cups filtered or distilled water
- 1 tablespoon sea salt or other noniodized salt
- 1 pound small pickling cucumbers
- ¼ cup white wine vinegar or apple cider vinegar

In a large jar or other glass or ceramic container, combine garlic, onions, mustard seed, peppercorns, coriander, oregano, water, and salt and stir. Add the cucumbers, then cover with a plate or other object that keeps the contents submerged below the surface of the brine. (Some of the spices will rise to the top, but that's okay.)

Ferment for about 2 weeks or until tart. Add vinegar, cover, and refrigerate. Pickles can keep for several weeks in the refrigerator.

MAIN DISHES

SPIRALIZED ZUCCHINI PASTA WITH OREGANO PESTO

IN THIS DELICIOUS RE-CREATION OF PASTA SERVED WITH PESTO, WE TAKE ADVANTAGE of the antibacterial and antifungal properties of oregano (though the leaves used here are not as potent as the purified essential oil), the *Akkermansia*-stimulating properties of oleic acid in olive oil, and the modest quantity of inulin prebiotic fiber in garlic. This oregano pesto serves as a delicious salad dressing too.

A spiral cutter, widely available in most department and cooking stores, is used to shape the “noodles.” You can now also save yourself a little work by buying precut spiral noodles, found in the frozen food or refrigerated section of the supermarket. To reduce moisture in the spiralized zucchini (which can water down the sauce), some people like to wrap the noodles in paper towels and press out excess water prior to cooking.

MAKES 2 SERVINGS

- ½ cup raw pine nuts
- 3 cloves garlic
- ½ cup oregano leaves, coarsely chopped
- 2 tablespoons lemon juice, freshly squeezed or bottled
- ½ cup + 2 tablespoons extra-virgin olive oil, divided
- ¼ cup grated Parmesan cheese
- ¼ teaspoon sea salt
- Ground black pepper to taste
- 1 pound zucchini, spiral-cut into noodles

In a blender, combine pine nuts, garlic, oregano, lemon juice, ½ cup olive oil, Parmesan cheese, salt, and pepper and blend until pureed. Set aside.

In a medium to large skillet, heat the remaining olive oil over medium-high heat, add the zucchini, and sauté until tender, about 3 minutes.

Serve the zucchini topped with the pesto.

GINGER CHICKEN

HERE IS THE PREBIOTIC FIBER-RICH VERSION OF A PERENNIAL CHINESE RESTAURANT favorite.

I specify chicken thighs because many meat producers and grocers remove the skin and bones from chicken breasts, but those are what provide the flavor and health benefits. The last thing you want to do is buy skinless, boneless chicken. We do not limit fat, of course. And you can save the bones to make soup.

Be careful in your choice of fish sauce because many brands contain unhealthy additives. (Thai Kitchen brand is a safe choice.)

MAKES 4 SERVINGS

3 pounds chicken thighs, bone-in with skin
2 tablespoons coconut oil
5 cloves garlic, minced
1 leek stalk, halved and sliced
4 ounces shiitake mushrooms, sliced
6 green onions, white portion thinly sliced, green portion sliced into 1-inch lengths
2½ tablespoons gluten-free soy sauce, tamari, or coconut aminos
2 tablespoons freshly grated ginger or 2 teaspoons dried ginger
2 tablespoons vinegar
1 tablespoon fish sauce

Preheat oven to 375°F.

Place chicken in baking pan and bake for 45 minutes.

During the last 10 minutes of baking, heat oil in a large skillet over medium-high heat, then combine garlic, leek, shiitake mushrooms,

and the white portion of green onions and cook until softened, for 4–5 minutes. Stir in gluten-free soy sauce and ginger followed by vinegar and fish sauce. Add green portion of green onions.

Remove chicken from oven and transfer to skillet, including all drippings. Reduce the heat to low and allow to simmer for 5 minutes, basting chicken thighs occasionally.

ITALIAN SAUSAGE SOUP

HERE'S A SPICY SOUP PACKED WITH PREBIOTIC FIBERS FROM ONION, GARLIC, daikon radish, and lentils, accompanied by the *Akkermansia*-blooming oleic acid of olive oil and the antifungal effects of oregano.

Lentils provide the galactooligosaccharide variety of prebiotic fiber, which is among the healthiest fibers you can get. A mix of inulin prebiotics comes from the onion, garlic, and daikon radish, with a little capsaicin from the hot sauce thrown in for good measure (which you can, of course, adjust depending on how hot your sauce is and your tolerance for this effect).

MAKES 8 SERVINGS

- ¼ cup extra-virgin olive oil
- 1 medium yellow onion, chopped
- 4 cloves garlic, minced
- 12 ounces Italian sausage, sliced
- 6 cups chicken stock or water
- 3 cups spinach, fresh or frozen, coarsely chopped
- 1 daikon radish, sliced
- 2 celery stalks, sliced
- 1 cup lentils
- 1 (14.5-ounce) can diced tomatoes
- 2 tablespoons fresh oregano, chopped, or 1 tablespoon dried oregano
- 1 tablespoon hot sauce
- Sea salt and ground black pepper to taste

In a large saucepan, heat the oil over medium-high heat, then add onion, garlic, and sausage. Cover, stirring frequently, until the sausage is cooked and onions are translucent, for 5–6 minutes.

Transfer the sausage mixture to a large stockpot or other large vessel. Over high heat, add chicken stock or water, spinach, daikon, celery, lentils, tomatoes, oregano, hot sauce, salt, and pepper to the pot. Bring the soup to a boil, then reduce the heat to low and simmer, covered, for 30 minutes or until lentils have softened.

SICILIAN PIZZA

WITH THE MODIFICATIONS I INTRODUCE TO PIZZA MAKING, I CANNOT REALLY call this an authentic Sicilian Pizza. But this recipe illustrates how to modify a familiar favorite food to put it to work rebuilding your intestinal microbiome instead of destroying it.

The flaxseed and psyllium in the crust and the onion, garlic, mushrooms, oregano, and basil in the toppings all make a contribution. For an extra microbiome boost, you can even add inulin or acacia fiber to the pizza sauce.

MAKES 4 SERVINGS

CRUST:

- 3 cups almond meal/flour
- ¼ cup ground golden flaxseed
- ¼ cup ground psyllium seed
- 2 eggs
- ½ teaspoon sea salt
- 4 ounces cream cheese
- 4 ounces mozzarella cheese, grated or sliced
- ½ cup water

TOPPINGS:

- 4 tablespoons extra-virgin olive oil, divided
- 1 yellow onion, chopped
- 3 cloves garlic, minced

4 ounces white button or portabella mushrooms, sliced
2 tablespoons fresh oregano, chopped, or 1 tablespoon dried oregano
¼ cup fresh basil, chopped, or 1½ tablespoons dried basil
2 teaspoons inulin powder or acacia fiber (optional)
6 ounces pizza sauce
6 ounces mozzarella cheese, grated or sliced

TO MAKE CRUST:

Preheat oven to 375°F.

In a large bowl, add almond meal/flour, flaxseed, and psyllium seed and mix. Add the eggs and mix well.

In a microwave-safe bowl, combine cream cheese, mozzarella cheese, and water and microwave for 45 seconds to soften. Pour this mixture into the almond meal/flour mixture and mix thoroughly.

Line a baking pan or pizza stone with parchment paper. Place the dough on the parchment paper and, using your hands or a large spoon, spread the dough out to achieve ½-inch thickness with a raised border at the edge. Dip your hands in water to help smooth dough.

Bake the crust for 18–20 minutes or until it just begins to turn golden brown. Remove from oven.

TOPPINGS:

In a medium skillet, heat 2 tablespoons olive oil over medium-high heat, then add the onions, garlic, and mushrooms, and cook until the onions are translucent and the mushrooms have softened. Stir in oregano and basil, then remove from heat.

Spread this mixture over the baked crust. If adding inulin powder or acacia fiber to the pizza sauce, stir it in, then pour the sauce evenly over the toppings. Distribute mozzarella cheese over top.

Return the pizza to the oven until the cheese has melted, for 15–18 minutes. Remove and cut into 8 slices.

SALMON WITH AVOCADO LIME SAUCE

DRESS UP YOUR SALMON WITH THIS UNIQUE SAUCE THAT OFFERS THE ANTIBACTERIAL and antifungal properties of ginger, and cilantro and coriander (the leaf and seed from the same plant), and the prebiotic fiber of avocado plus the *Akkermansia*-cultivating effect of the oleic acid in olive oil.

MAKES 2 SERVINGS

- 1 avocado, pulp removed
- 3 tablespoons extra-virgin olive oil
- 2 tablespoons lime juice (fresh or bottled)
- 2 tablespoons onion, minced
- ¼ cup fresh cilantro, chopped
- 1 teaspoon freshly ground ginger, or ½ teaspoon dried ginger
- ½ teaspoon ground coriander
- 3 tablespoons white wine vinegar
- ½ teaspoon salt
- 2 tablespoons extra-virgin olive oil or butter
- 2 8-ounce salmon filets

In a blender, combine the pulp of one avocado with 3 tablespoons of olive oil and lime juice, onion, cilantro, ginger, coriander, vinegar, and salt and blend until smooth. Set aside.

Season both sides of the salmon with salt and pepper to taste.

In a large skillet, heat 2 tablespoons of oil over medium-high heat. Place salmon filets, skin side up, in the oil and cook for 4–5 minutes. Flip the salmon and cook for an additional 4–5 minutes.

Serve the salmon topped with the avocado lime sauce.

BEEF SHAWARMA WITH SUPER GUT TZATZIKI

BEEF (OR LAMB, CHICKEN, OR PORK) SHAWARMA IS AN OPPORTUNITY TO OBTAIN the microbiome health benefits of cumin, coriander, cloves, and cinnamon in the spice mixture called garam masala.

This is also another way to put Super Gut Tzatziki (recipe on page 250) to work, which combines the prebiotic fiber of garlic and antimicrobial effects of mint with the probiotic species of choice from one of your homemade yogurts. You may like this Beef Shawarma wrapped in a Turmeric Flaxseed Wrap (recipe on page 267) or simply put atop some riced cauliflower. (Riced cauliflower is cauliflower that has been put into a food processor or grated to yield a riced texture, then steamed; alternatively, you can now purchase, then steam, pre-riced cauliflower, a big time-saver.)

You can make your own garam masala by roasting roughly equal portions of cinnamon stick, cardamom pods, cumin seeds, coriander seeds, cloves, and peppercorns in a skillet over medium heat until fragrant (3–5 minutes), then grinding in a coffee grinder.

MAKES 4 SERVINGS

1½ pounds beef, thinly sliced (rib eye, chuck eye, top blade—the fattier, the better)

½ cup extra-virgin olive oil

1 tablespoon white wine vinegar

Juice of 1 lemon

1 teaspoon sea salt

¼ teaspoon ground black pepper

1 tablespoon garam masala

In a large bowl, combine the beef, olive oil, vinegar, lemon juice, salt, and pepper and cover. Marinate for 2 hours (or longer), stirring occasionally.

In a large skillet over medium-high heat, pour in the beef mixture, spreading the slices of beef so that each contacts the skillet directly. Cook to desired level of doneness, approximately 3 minutes. Shake garam masala over the top and stir into the mixture.

Remove the beef from the heat and spread it over riced cauliflower or lay it onto a Turmeric Flaxseed Wrap, roll it into a cone, and top with a tablespoon of tzatziki.

TURMERIC FLAXSEED WRAP

WHEN THE NEED ARISES TO ENCLOSE SOME FOODS—MEATS, CUCUMBERS, TOMATOES, tzatziki, and so forth—try this easy and inexpensive wrap rather than resort to the various high-cost grain-free wraps at the store. We throw a little turmeric into this wrap for its antibacterial and antifungal properties.

MAKES 1 WRAP

¼ cup ground golden flaxseed
½ teaspoon onion powder
½ teaspoon ground turmeric
1 teaspoon extra-virgin olive oil
1 egg
1 tablespoon water
Dash sea salt

In a small bowl, combine flaxseed, onion powder, turmeric, olive oil, egg, water, and salt and mix thoroughly.

Grease a 9-inch microwave-safe pie pan. Pour the flaxseed mixture into the pan, tilting to spread it evenly. Microwave on high for 2–3 minutes or until cooked. Allow to cool 5 minutes, then remove with a spatula. Alternatively, bake in a greased oven-safe pie pan at 375°F for 10 minutes or until the center is cooked. Allow to cool for 5 minutes, then remove with a spatula.

ASPARAGUS, LEEK, AND WHITE BEAN QUICHE

START YOUR DAY WITH A SLICE OF QUICHE RICH IN PREBIOTIC FIBER FROM ONION, garlic, leeks, and white beans. This recipe also illustrates how to make a tasty piecrust using nongrain meals or flours.

MAKES 8 SERVINGS

CRUST:

1½ cups almondmeal/flour (or ground walnuts or pecans)
¼ cup ground golden flaxseed

¼ cup butter or coconut oil, melted

¼ cup water

½ teaspoon sea salt

FILLING:

2 tablespoons olive oil, butter, or coconut oil

1 yellow onion, diced

4 cloves garlic, minced

1 leek stem, halved and sliced

1 pound ground pork, beef, turkey, or chicken

½ cup cooked white beans

¼ cup broth

1 tablespoon dried oregano

1 tablespoon dried basil

2 cups fresh or frozen asparagus, coarsely chopped

8 eggs

1 teaspoon sea salt

Ground black pepper to taste

Preheat oven to 350°F. Grease a 10-inch pie plate.

To make the crust, in a medium to large bowl, combine almond meal/flour, flaxseed, butter, water, and salt and mix thoroughly. Transfer the mixture to a greased pie plate and spread it with a spoon or spatula. Wet it with water if needed to help smooth it out. Spread it at least 1 inch up the sides of the plate.

Place in the oven and bake for 15–18 minutes or until the crust just turns golden brown. Remove and cool.

Meanwhile, in a large skillet, heat the olive oil over medium-high heat, then add the onions and garlic and cook until the onions soften and are translucent, for 3–5 minutes. Add the leek and pork, breaking it up as it cooks. Add the beans, broth, oregano, and basil, then cover, stirring intermittently until the meat is cooked through. Remove the mixture from the heat, uncover, and allow to cool for 10 minutes.

In a large bowl, add asparagus, eggs, salt, and pepper and mix. Pour the pork mixture into the egg mixture and mix thoroughly. Then, pour the combination into the cooled piecrust and bake for 35 minutes or until the eggs set.

YAKISOBA NOODLES

IF YOU HAVE EVER HAD YAKISOBA NOODLES IN A JAPANESE RESTAURANT, YOU know that they can be the height of umami comfort foods. But because we don't want the problems associated with wheat or buckwheat noodles, we use shirataki noodles made from the konjac root, which provides the fabulous prebiotic fiber glucomannan. Shirataki noodles are an ultra-low carbohydrate (3 grams or less per 8-ounce package). Look for shirataki without added tofu to avoid soy. You can also use spiral-cut kohlrabi noodles or hearts of palm noodles.

Shirataki noodles absorb the flavors of the foods they accompany, having little to no taste of their own. So don't be turned off by their peculiar odor right out of the package because it disappears with a brief rinse.

Shirataki noodles work best in Asian dishes, though you can experiment with Italian and other cuisines. Be careful with your choice of oyster or fish sauce used in this recipe because many brands add undesirable ingredients or additives; the widely available Thai Kitchen brand is a safe choice.

MAKES 2 SERVINGS

- ¼ cup coconut oil
- 1 pound ground pork (or beef, chicken, turkey)
- 4 garlic cloves, minced or crushed
- 4 ounces fresh shiitake mushrooms, stems discarded, caps sliced
- 5 green onions, sliced, white and green parts separated
- 1 tablespoon grated fresh ginger, or 1 teaspoon ground ginger
- 1 tablespoon sesame seeds
- ½ teaspoon red pepper flakes
- 2 to 3 tablespoons gluten-free soy sauce, tamari, or coconut aminos
- 2 tablespoons toasted sesame oil
- 1½ tablespoons oyster or fish sauce
- 2 packages (8 ounces each) shirataki noodles

Heat the coconut oil in a wok or large skillet over medium-high heat. Add the meat, garlic, mushrooms, white portions of the onions, ginger, sesame seeds, and pepper flakes and cook until the meat is fully cooked. (Add a touch of water if the pan becomes too dry.)

Reduce heat to low and stir in the soy sauce, sesame oil, oyster sauce, and green portion of the onions, maintaining the mixture at low heat for 1–2 minutes.

Meanwhile, bring 4 cups of water to a boil in a large saucepan. Rinse the shirataki noodles in a colander under cold running water for about 15 seconds and drain. Pour the noodles into the boiling water and cook for 2–3 minutes. Drain the noodles and transfer to the wok/skillet with the pork mixture. Toss and serve.

DESSERTS

CHOCOLATE CHIP FROZEN YOGURT

TO MAKE FROZEN YOGURT, WE AVOID USING ICE CREAM MAKERS AND MINIMIZE the forceful mechanical agitation of blenders so that we don't kill the probiotic microbes provided by our yogurts. Choose the yogurt for the effect you desire.

MAKES 2 SERVINGS

1½ cups yogurt of your choice

1 tablespoon unsweetened cocoa powder

1½ tablespoons dark chocolate chips

Sweetener equivalent to 3 tablespoons sugar

Optional: 1 teaspoon inulin/FOS, acacia powder, or other prebiotic powder

In a bowl, combine the yogurt, cocoa powder, chocolate chips, sweetener, and optional prebiotic fiber and mix thoroughly. Allow the mixture to set at least 1 hour in the freezer.

ONE-MINUTE STRAWBERRY ICE CREAM

HERE IS A WAY TO MAKE YOUR OWN ICE CREAM THAT INVOLVES ALMOST NO effort. Note that, for this time-saving shortcut to work, the strawberries (or other berries or fruit) must be frozen. This is how you can enjoy a bowl of ice cream sans the intestinal mucus- and microbiome-disrupting effects of synthetic emulsifying agents.

MAKES 2 CUPS

8 ounces heavy whipping cream or canned coconut milk
1 cup frozen strawberries or other berries or fruit
1 green, unripe banana, scooped out of the peel and coarsely
chopped
Sweetener equivalent to 1 tablespoon sugar
½ teaspoon vanilla extract

In a blender, combine whipping cream, berries, banana, sweetener, and vanilla. Blend until the mixture is smooth.

ORANGE CLOVE SCONES

THE EUGENOL OIL OF CLOVES IS AMONG THE MOST POTENT OF NATURALLY OCCURRING oils that thickens the intestinal mucus barrier, an effect achieved via proliferation of mucus-stimulating bacterial species. Here is a tasty orange-flavored scone with the added scents, flavors, and health benefits of ground cloves. These scones also offer you the opportunity of adding 4 teaspoons of inulin or acacia fiber into the dry portion of the recipe, yielding around 2 grams prebiotic fiber in each scone.

MAKES 8 SCONES

SCONES:

3 cups almond flour
¼ cup ground golden flaxseed
2 tablespoons ground psyllium seeds
½ teaspoon ground cloves

2 teaspoons baking soda
Sweetener equivalent to 1 cup sugar
Dash sea salt
4 teaspoons inulin or acacia fiber (optional)
1 egg
1 cup heavy cream or canned coconut milk
½ stick (4 oz.) butter, melted

VANILLA GLAZE:

¼ cup xylitol
2 tablespoons heavy cream or canned coconut milk
1 tablespoon coconut oil
1 teaspoon vanilla extract

Preheat the oven to 350°F. Line a baking sheet with parchment paper.

In a large bowl, combine the almond flour, flaxseed, psyllium, cloves, baking soda, sweetener, salt, and optional prebiotic fiber and mix thoroughly.

In a separate small bowl, whisk together the egg, 1 cup of cream, and butter. Pour the egg mixture into the dry mixture and combine thoroughly to a doughlike consistency.

Spread the dough on the baking sheet and form into approximately an 8-inch round, ¾-inch thick shape. Cut the round into 8 triangular pieces (like slicing a pizza) using a knife or spatula.

Bake the scones for 30 minutes or until a toothpick withdraws dry. Allow to cool.

To make the glaze, combine the xylitol, cream, coconut oil, and vanilla extract in a small saucepan over low heat, stirring until foam forms. Remove from the heat and allow to cool.

Drizzle vanilla glaze over the tops of the cooled scones.

RASPBERRY CREAM PIE

EVEN IF THE PEOPLE AROUND YOU—FAMILY, FRIENDS, OTHERS IN YOUR SOCIAL circle—are simply uninterested in the health adventure you have embarked on, you can still enjoy delicious ways to deliver added prebiotic fibers (pectin from raspberries, added FOS/inulin in the filling) to your diet. You can share this pie with them, and no one is likely to notice that they are enjoying an enormously healthy alternative to the grain- and sugar-based conventional counterpart.

MAKES 8 SERVINGS

CRUST:

1½ cups ground pecans, walnuts, or almonds (or almond flour)
4 tablespoons butter, melted
Dash sea salt

FILLING AND TOPPING:

2½ cups raspberries, fresh or frozen, divided
½ cup water
16 ounces cream cheese, room temperature
½ cup sour cream
2 teaspoons FOS/inulin powder
Sweetener equivalent to ½ cup sugar

Preheat the oven to 375°F. Grease a 9-inch pie pan.

TO MAKE THE CRUST:

In a medium bowl, combine the ground nuts, butter, and salt and mix well.

Transfer the nut mixture to the pie pan and spread it along the bottom and approximately ½ inch up the sides. Bake for 10 minutes or until lightly browned. Lower oven temperature to 325°F.

TO MAKE THE FILLING AND TOPPING:

In a small or medium-sized saucepan over medium heat, combine 1½ cups raspberries and water. Bring to a boil and lightly simmer

and stir for 1 minute, then remove from the heat. Puree the berries using a stick blender or vigorously crush the raspberries using a spoon.

Meanwhile, in a large bowl, combine the cream cheese, sour cream, FOS/inulin, and sweetener and mix well.

Transfer approximately half the raspberry mixture into the cream cheese mixture. Using a stick blender, blend the ingredients until well mixed. Pour this mixture into the piecrust and bake for 15 minutes. Remove pie from the oven and allow it to cool to room temperature.

Spread the remaining raspberry mixture over the top, then distribute the remaining whole raspberries over the pie.

SUPER GUT SAMPLE THREE-DAY MENU PLAN AND SHOPPING LISTS

THIS SAMPLE MENU PLAN DRAWS FROM SUPER GUT RECIPES TO get you off to a confident start. Although the Super Gut lifestyle introduces some major changes in food choices, you will quickly recognize that there are plenty of healthy, delicious foods to choose from while you're rebuilding and empowering a healthy microbiome. You may find that three meals a day is too much now that you have banished the gliadin-derived opioid peptides found in wheat that used to stimulate your appetite, are not limiting fats or oils that are satiating, and may even have added *L. reuteri* yogurt, which further suppresses appetite via oxytocin. Many people who follow this lifestyle eat no more than two meals a day. Listen to your appetite signals for when to eat—don't eat because it's time to eat.

Feel free to substitute foods that you are already comfortable with and that still fit into the Super Gut lifestyle. You likely do not need a recipe to make a familiar breakfast of three fried eggs with some sliced ham, topped with a hot chili sauce (for its microbiome-modifying effects of capsaicin) and accompanied by a small serving of black beans for prebiotic fiber.

Remember to make a habit of including some source of prebiotic fiber in every meal. If you are having one of the yogurts or a smoothie, for example, stir in a teaspoon of inulin or acacia fiber. Add some beans, peas, or other legumes to omelets, salads, or as a side dish. Include asparagus, sliced

leeks, sliced avocado, or dandelion greens in salads along with thinly sliced raw potato.

A shopping list follows this menu plan. Don't be intimidated by the number of items—you are restocking your kitchen with healthier replacements. Once you are comfortably on the Super Gut lifestyle, you won't have to buy so many new foods.

DAY 1

BREAKFAST

L. reuteri + *B. coagulans* yogurt with a ½ cup of blueberries and dash of liquid stevia
Clove Green Tea

LUNCH

Dandelion Greens and Raw Potato Salad with Avocado Lime Dressing
Hot Chili Fries dipped in Hot Chili Sauce

DINNER

Sicilian Pizza
One-Minute Strawberry Ice Cream

DAY 2

BREAKFAST

Asparagus, Leek, and White Bean Quiche
Clove Green Tea

LUNCH

Cream of Mushroom Soup
Orange Clove Scones

DINNER

Salmon with Avocado Lime Sauce
Mocha Mint Kefir

DAY 3

BREAKFAST

Matcha Strawberry Key Lime Smoothie
Clove Green Tea

LUNCH

Bacon, lettuce, and tomato (or your choice of meat and fixings) on
Herbed Focaccia Bread
Gingerbread Coffee

DINNER

Beef Shawarma with Super Gut Tzatziki
Fermented Roasted Peppers (will need to be fermented at least
72 hours beforehand)
Raspberry Cream Pie

SHOPPING LISTS

FREQUENTLY USED FOODS

These are foods that you will rely on frequently and are therefore worth stocking up on. Don't sweat the up-front costs—you are likely restocking your fridge and pantry with a lot of new items at first. Over time, you will see that this lifestyle either costs no more than a conventional diet or even saves you a modest amount because of the marked reduction in appetite we experience when we eat this way.

The day-by-day lists do not include items on this Frequently Used Foods list.

Acacia fiber
Almond flour or meal
Butter
Chili pepper sauces
Cloves, whole

Coconut milk, canned
Coconut oil
Extra-virgin olive oil
Fructooligosaccharide (FOS) powder
Garlic cloves
Green tea (bags or loose leaf)
Ground golden flaxseed
Ground psyllium seed
Half-and-half (or your choice of fermenting vehicle)
Herbs and spices—fresh and/or dried basil, oregano, rosemary,
nutmeg, cinnamon, coriander seeds, cayenne or other hot
peppers, turmeric, cumin, curry powder, garam masala, thyme,
ginger
Inulin powder
Sweeteners (See list of safe sweeteners on page 300)

Here are the foods you'll need in addition to Frequently Used Foods to follow this menu plan:

DAY 1

Blueberries, fresh or frozen
Dandelion greens
Raw white potatoes
Red onion
White button mushrooms
Eggs
Bacon
Avocados
White wine vinegar
Fresh cilantro
Lime
Turnips
Onion powder
Grated Parmesan cheese
Hot chili sauce

Cream cheese
Mozzarella cheese
Pizza sauce
Cream
Frozen strawberries

DAY 2

Yellow onion
Leek
Ground pork, beef, turkey, or chicken
Cooked white beans
Chicken or beef broth
Asparagus, fresh or frozen
Eggs
Yellow onion
Leek
White button mushrooms (or portabella or cremini)
Coconut milk, canned
Chicken or vegetable stock
Cilantro, fresh
Baking soda
Choice of sweetener (See list of safe sweeteners on page 300)
Avocado
White wine vinegar
Salmon filets
Kefir
Instant coffee granules
Cocoa powder, unsweetened
Mint extract

DAY 3

Matcha tea powder
Mint leaves
Blueberries, fresh or frozen

Bacon

Lettuce

Tomato

Mozzarella cheese, shredded

Dried onion powder

Olives, black or kalamata

Sun-dried tomatoes

Eggs

Beef

Lemon

Cucumber

Lemon juice, freshly squeezed or bottled

Dill or mint, fresh

Bell peppers

Bay leaf

Ground pecans, walnuts, or almonds (or almond flour)

Raspberries, fresh or frozen

Cream cheese

Sour cream

APPENDIX A

RESOURCES

AIRE DEVICE FOR BREATH H_2 , METHANE, AND H_2S TESTING

Because the AIRE device was originally conceived as a means to detect H_2 gas in people with irritable bowel syndrome when they are exposed to FODMAPs-containing foods, the instructions included with the device do not lay out the entire story on how to use this device for detecting SIBO. Until the company updates instructions, follow the instructions I provided in Chapter 8 to detect H_2 gas and methane in your breath to help identify SIBO and understand any food intolerances you may experience. (The AIRE device also detects hydrogen sulfide gas, but the science behind this application is preliminary. Please follow our online conversations at www.DrDavisInfiniteHealth.com to understand how to apply this measure.)

The device is available from the manufacturer, FoodMarble: www.foodmarble.com.

H_2 BREATH TESTING

These are the tests for breath H_2 and methane that can be performed at home or under the supervision of your doctor. At home, you consume

either the sugar glucose or lactulose, then submit multiple breath samples by mail to a lab, and the results are then mailed back to you. Because glucose is not a satisfactory sugar for assessment of SIBO, I recommend only using lactulose, which is usually available only through a doctor. However, the Life Extension Foundation makes lactulose available directly and can provide results for both H_2 and methane breath testing for around \$250:

Lactulose H_2 and methane breath testing: www.lifeextension.com/lab-testing/itemlc100063/sibo-home-breath-kit-lactulose

A new service called trio-smart breath testing, developed in part by SIBO expert Dr. Mark Pimentel, is now available to test for hydrogen (H_2), methane, and hydrogen sulfide (H_2S). The cost for one round of testing is just under \$300 and the company says that many health-care insurance policies and Medicare cover most or all of the cost.

Trio-smart H_2 , methane, and H_2S breath testing: www.triosmartbreath.com

STOOL TESTING

A number of methods may be used to assess the composition of bowel flora. Older methods that relied on growing microbes in a petri dish have proven unreliable because many bowel species do not grow in those conditions. Instead, “culture-independent” methods have uncovered far greater species diversity than we previously suspected. The following testing services rely on culture-independent assessment methods, such as DNA analysis by polymerase chain reaction, or PCR. (Despite the progression of technology, some testing services still use the older outdated methods; I advise against using this sort of testing unless you are unable to access the services listed below.)

Unfortunately, stool tests can only be ordered by a health-care practitioner. You should ask your doctor (who may not be familiar with them) for these tests, and he or she will have to register and create an account with the test company if they are not already associated. If your doctor refuses, find a health-care practitioner who is willing to work with you to assess this aspect of your health. Customer service representatives at each testing company can also identify practitioners in your area who use their service.

Costs are in the range of \$200 to \$300, except for Vibrant Wellness Gut Zoomer, the most comprehensive test, which is priced around \$700, and Thryve, the least costly at around \$100.

Vibrant Wellness Gut Zoomer

The oddly named Gut Zoomer is the most comprehensive stool test, reporting the following markers:

- Identification and quantification of bacterial species with strain designations
- Identification of Archaea
- Identification of fungi
- Identification of parasites
- Identification of some viruses
- Identification of physiological markers such as pancreatic elastase, calprotectin, bile acids, and fatty acids

www.vibrant-wellness.com/tests/gut-zoomer/

Diagnostic Solutions Laboratory GI-Map

This microbial assay relies on quantitative PCR testing to identify stool species.

www.diagnosticsolutionslab.com

Genova GI Effects Comprehensive Profile

Opt for the Comprehensive Profile for the most complete analysis. The GI-Map and GI Effects stool profiles are good services that yield plenty of helpful information but have major drawbacks, namely, the inability to identify species and strains. These tests therefore provide only broad insights into bowel bacterial composition. They do identify Archaea, fungi, and parasites, as well as a number of important physiological markers.

www.gdx.net

Thryve Gut Health Test

Thryve testing is comprehensive, able to identify bacteria down to species and strain and to quantify each. The test, however, does not identify

Archaea, fungi, or viruses. The company also steers you toward its brand of probiotics on the basis of test results, and I find that not a very helpful strategy. The upside is that Thryve is among the most affordable of tests, often priced lower than \$100.

www.thryveinside.com/products/thryves-gut-health-test

Viome Gut Intelligence

I find the Viome service to be the least helpful. Although comprehensive in identifying microbial species and strains, it provides no quantification. In other words, if an undesirable species such as a *Klebsiella* species or *Clostridium difficile* is identified, without quantification there is no way to know whether it is a problematic finding or not. The dietary advice prompted by results is also, in my view, not helpful.

beta.viome.com/products#tests

HERBAL ANTIBIOTICS

CandiBactin-AR + CandiBactin-BR

These two products are available from Amazon, but health-care practitioners can obtain them from the manufacturer, Metagenics:

metagenics.com

FC-Cidal + Dysbiocide

These two products are available from Amazon:

Amazon.com

PREFERRED PROBIOTICS

Synbiotic 365

This probiotic contains 20 billion CFUs of the following strains: *L. rhamnosus* GG, *L. reuteri* UALre-16 (also designated NCIMB 30242), *L. gasseri* BNR17, which are keystone species, and a number of other important strains. It also contains *Saccharomyces boulardii*, a yeast that provides an additional advantage in rebuilding a microbiome.

Unitednaturals.com

Ther-Biotic Synbiotic

This product has 50 billion CFUs per capsule of seven strains, many of which are on our list of keystone microbes, such as *L. rhamnosus* GG and *L. reuteri* UALre-16 (also designated NCIMB 30242). It is available from Klaire Labs or through selected health-care practitioners. You can make yogurt with this product.

Klaire.com

Vital Flora

Vital Flora from Vital Planet takes a different approach: include as many species and strains as possible at high counts. Vital Flora accordingly contains 60 billion CFUs of 60 strains, consistent with cofounder Brenda Watson's (cofounder of Renew Life, also) philosophy of cultivating species diversity.

VitalPlanet.com

Sugar Shift

Noted microbiologist Dr. Raul Cano developed this collection of unusual species on the basis of his research into synergistic “guilds” of species that yield greater-than-expected levels of various metabolites. Preliminary experience suggests this collection provides important benefits that include reduction of blood sugar. Strains are, unfortunately, not specified on the label, but the application of the guild effect puts this preparation at the forefront of the science. You can make yogurt with this product.

Biotique.com

Jarro-Dophilus EPS Digestive Probiotic

The mix of species and strains in this product, including some potentially keystone strains, may make it especially helpful for managing mood and emotional health. Each capsule provides only 5 billion CFUs, so you can make a tasty yogurt with this product to increase bacterial counts.

Jarrow.com

DS-01 Daily Synbiotic

This is an interesting probiotic in that there is a lot of science behind the preparation of over twenty species/strains with a total count of 53.6 billion.

Seed Health has created a capsule that survives passage through the small bowel and purportedly releases into the colon, but that, in my view, is a downside because for our SIBO-eradication purposes we want release into the small intestine. Should you take this probiotic, I would remove the external capsule and take only the internal capsule. Also, only some strain designations are recognizable, and many are proprietary. Nonetheless, Seed is an interesting addition to the mix of choices.

Seed.com

Pendulum Glucose Control

Pendulum has launched the world's first probiotic to deliver a strain of *Akkermansia* along with four other butyrate-producing species. The Glucose Control product is targeted to help manage blood sugar in people with type 2 diabetes, but it can also be taken by nondiabetics for other purposes, such as reintroducing *Akkermansia* in people who lack this species.

I advocate that only those of us who completely lack *Akkermansia* by stool analysis take the Pendulum product. If you have *Akkermansia* as identified via stool testing, then I would suggest you instead follow strategies that cause *Akkermansia* populations to bloom rather than supplementing with this very costly product, which is priced around \$160–\$200 per one-month supply. (See Chapter 5 for the discussion on how to bloom *Akkermansia*.) You cannot make yogurt with this probiotic because the *Akkermansia* dies upon exposure to air (although some of the other species included in the Pendulum product will indeed ferment to yogurt).

Pendulum Glucose Control provides

- *Akkermansia muciniphila* WB-STR-0001
- *Clostridium beijerinckii* WB-STR-0005
- *Clostridium butyricum* WB-STR-0006
- *Eubacterium hallii* WB-STR-0008
- *Bifidobacterium infantis* 100

Obtain Pendulum from the manufacturer:

Pendulumlife.com

Evivo

Bifidobacterium infantis EVC001 is the keystone strain of *Bifidobacterium infantis* that, with breastfeeding, has been demonstrated to cultivate a healthy microbiome in newborns and infants when taken during the first few months of life. (It is not yet clear whether similar benefits develop in babies who are formula fed and therefore not receiving oligosaccharides from breast milk, though there is certainly no harm in supplementing formula-fed babies with this probiotic.) However, I suggest that pregnant moms make yogurt with this strain for their own consumption, which will then allow them to pass this microbe on to their child during delivery and breastfeeding. The resulting yogurt is thick, rich, and delicious.

Obtain Evivo from the manufacturer:

Evivo.com

Florastor

Recall that *Saccharomyces boulardii* is a beneficial fungal species that is especially helpful for recovering from diarrhea after a course of antibiotics. Because it is a fungus, it is not a microbe you can make yogurt with, but it can still be a helpful component of your probiotic efforts to rebuild a healthy microbiome.

It is also unclear which strain is preferred, so we stick to the strain that is among the best studied, *Saccharomyces boulardii* lyo CNCM I-745. (The relative efficacy of various *S. boulardii* strains has not been well mapped out.)

This strain of *Saccharomyces boulardii* is available as the commercial product Florastor from major pharmacies and other major retailers, including Walmart, Meijer, and Amazon.

Sources of Specific Microbial Species/Strains for Fermentation***Lactobacillus reuteri* DSM 17938, ATCC PTA 6475**

The BioGaia Gastrus tablets are available through Amazon as well as BioGaia's US distributor Everidis. Likewise, Osfortis capsules with the 6475 strain alone are available through the same routes.

Everidis.com

Another source of *L. reuteri*, the NCIMB 30242 strain, also likely a keystone strain, is available from Life Extension as their Florassist Heart Health product, with 2.5 billion CFUs per capsule. However, do not use this strain to make the Super Gut SIBO Yogurt because it lacks a bacteriocin.

Lifeextension.com

***Lactobacillus reuteri* SD 5865**

Here's another option: a yogurt-making kit using a different strain of *L. reuteri* that, in preliminary experience, yields many of the same effects, called "LR Superfood Starter."

www.cuttingedgecultures

***Lactobacillus gasseri* BNR17**

While we previously could only source this microbe from the South Korean company that commercialized it, Dr. Joseph Mercola has finally made it directly available in the US on his Mercola Market. You only need to purchase it once to obtain a single capsule that you can ferment into yogurt or other fermented food (from the 10 billion CFUs per capsule). Many of my followers will purchase a product like this, then share with others (via my Facebook pages) for a modest price to reduce costs. Also stay tuned to updates for availability on my website, www.DrDavisInfiniteHealth.com.

<https://www.mercolamarket.com>

***Bacillus coagulans* GBI-30,6086**

B. coagulans is available as the Digestive Advantage Daily Probiotic product from Schiff that is widely sold by many major retailers and online sources, including Meijer and Walmart.

***Lactobacillus helveticus* R0052 and *Bifidobacterium longum* R0175**

This combination of species, which lifts mood and reduces anxiety, is available from the manufacturer, Innovix Labs, as well as Life Extension, Amazon, and other major retailers:

Innovixlabs.com

Lifeextension.com

***Lactobacillus casei* Shirota**

This strain, which helps increase immunity against viral illnesses, increases mental clarity, and provides deep sleep for some people (especially in combination with *L. reuteri*), is available as a commercial drinkable product called Yakult. We ferment Yakult to increase the number of bacteria and to make a yogurt that no longer contains the skim milk or sugar in the original source product.

Retailers such as Walmart, Meijer, and Asian specialty stores carry Yakult. The manufacturer also has a store locator on its website:

Yakult.com

***Lactobacillus rhamnosus* GG**

L. rhamnosus GG strain has proven, time and again, superior to other strains of *L. rhamnosus* for such effects as recovery from diarrhea after a course of antibiotics or for antifungal effects.

L. rhamnosus GG is commercially available as the Culturelle product, with 20 billion CFUs per capsule, at major retailers such as Walmart, Meijer, Target, and Walgreens. As always, you can amplify the health effects using our Super Gut “bacterial count amplification system,” aka yogurt making, which achieves hundreds of billions of CFUs.

A growing number of products are making this strain available, including SuperSmart (www.supersmart.com) and Pure Encapsulations (www.pureencapsulations.com).

***Lactobacillus plantarum* 299v**

L. plantarum is another interesting probiotic species that has been shown to reduce the symptoms of bloating, abdominal discomfort, and bowel frequency in people with irritable bowel syndrome (and likely SIBO). Although its disadvantage is that it does not colonize the upper GI tract, only the colon, it does exert substantial antibacterial and mucus-stimulating effects. And, of course, it makes a tasty yogurt.

Jarrow Formulas has a product with 10 billion CFUs per capsule that can serve as a starter for fermentation. You can obtain it through major nutritional supplement retailers such as iHerb or through Jarrow directly:

Jarrowonline.com

Starter Cultures for Fermentation

Cutting Edge Cultures provides products that are useful to accelerate fermentation of vegetables and other foods, not just relying on the microbes present on the surface of the food. They provide a starter culture for fermenting vegetables as well as a kefir starter.

cuttingedgecultures.com

Cultures For Health offers starters for yogurt, kefir, kombucha, and cheeses in an astounding choice of varieties.

culturesforhealth.com

COMMERCIAL PREBIOTIC FIBERS

In addition to inulin, acacia fiber, glucomannan, and galactooligosaccharide powders, the following are several excellent commercial sources of prebiotic fibers that are obtainable through major nutrition retailers such as Vitacost, iHerb, and Amazon and health food stores:

Garden of Life Organic Fiber

Swanson Ultra Inulin

NOW Inulin Prebiotic Pure Powder

Jarrow Formulas Prebiotic Inulin-FOS

Cutting Edge Cultures Prebio Plus

Micro Ingredients Organic Inulin Powder

NOW Certified Organic Acacia Fiber

Hyperbiotics Organic Prebiotic Fiber Blend

Please add:

FERMENTED MEATS

In addition to salamis, pepperonis, sopressatas, and other fermented meats that are mostly from Italy and found in the refrigerated section of the grocery or specialty shop, one online retailer makes fermented grass-fed beef sticks available: Paleovalley. They provide five varieties that are delicious.

www.paleovalley.com

NON-ABSORBED CURCUMIN

Despite all the commercial hullabaloo about adding this or that ingredient to enhance the absorption of curcumin, *we do not want absorption*—we want it to stay within the GI tract so as to exert its antifungal and intestinal barrier-fortifying effects there. I therefore advise that you avoid brands that have added ingredients such as bioperine, piperine, or other formulations. The following products are straight curcumin, which has notoriously low bioavailability, meaning it will stay in your gut:

NOW Curcumin Softgels

Jarrow Formula Curcumin 95

Life Extension Curcumin Elite Turmeric Extract

Solaray Curcumin

SAFE SWEETENERS

To replace sugar (sucrose) in recipes, here is a conversion chart that lists the equivalents of safe noncaloric or minimally caloric sweeteners to 1 cup sugar. Although monk fruit and inulin are safe sweeteners, they are rarely if ever used alone.

EQUIVALENT TO 1 CUP OF SUGAR:

Stevia, powder or liquid—Variable depending on brand;
consult label

Allulose—1½ cups

Erythritol—1½ cups

Xylitol—1 cup

(Inulin)

(Monk fruit)

COMBINATION SWEETENERS:

Truvia (erythritol + rebiana, an isolate of stevia): 1¼ cups

Pyure (erythritol + stevia): ½ cup

Virtue (erythritol + monk fruit): ¼ cup

Swerve (erythritol + inulin): 1 cup

Lakanto (erythritol + monk fruit): 1 cup

RECOMMENDED FERMENTATION DEVICES

Actually, any means of maintaining the temperature “preferred” by the bacterial species you are fermenting can get the job done and yield a delicious, healthy “yogurt” with health effects far beyond the stuff available in grocery stores. I made my first thirty batches of *L. reuteri* yogurt, for instance, by putting the bowl in the oven and turning the oven on to any temperature (e.g., 300°F) for one to two minutes, just enough to make the oven tropical or desert warm, every four to six hours. But sharing this method confused readers, who thought I was baking the yogurt, or occasionally plagued those who would forget to turn off the oven and killed all their microbes. Therefore, the simplest approach involves using a device that you can turn on, place your fermenting mixture into, then walk away.

Note that many yogurt makers and older Instant Pots have preset temperatures, which work with only some bacterial species. *L. reuteri*, for example, does best at human body temperature, around 97°F–100°F, but dies at 108°F–114°F, the temperature range preset in most such devices. Ideally, you will use a device that allows you to vary the temperature within the range of 97°F to 125°F to accommodate different species. By saying that bacterial species “prefer” a temperature range, I mean this is the temperature range in which a species proliferates at maximum rate and remains viable. *L. reuteri*, for example, proliferates rapidly at 100°F but dies at a temperature of 122°F, an ideal temperature for *Bacillus coagulans*.

If you struggle to obtain a thick, rich, pleasant-scented end result, put a thermometer into your device, either into the water bath or the yogurt itself, to assess the accuracy of the set temperature. Unfortunately, it is not uncommon for some devices to display inaccurate temperatures that impair fermentation. (One popular yogurt-making device that I tested, for instance, showed a temperature of 116°F despite being set to 106°F, an inaccuracy that yielded soured milk rather than yogurt.)

Sous Vide

Sous vide devices are simply temperature-controlled water baths designed for slow-cooking meats and other foods. However, we can redirect use of these handy devices for our fermentation projects.

I began the entire yogurt-fermenting process with a basin sous vide from Gourmia that I paid \$79 for at Bed, Bath, and Beyond. Unfortunately, I started talking about the device on my social media sites, and that triggered a surge in demand, and the price jumped up to over \$400. Prices on many other sous vide devices likewise went up. This has put basic sous vides into unreasonable price ranges for some brands, so I do not include those brands in the short list below. Thankfully, there are still some brands within a reasonable price range, around \$100.

Sous vide devices come as either a basin style or a “stick” that attaches to a basin of your choosing. If you choose a stick-style sous vide device, you will therefore need a basin to attach the sous vide; a large pan or other large vessel can work, or you can purchase inexpensive plastic basins (offered in the “People who buy this also buy this . . .” function on Amazon).

Dash Chef Series Sous Vide (basin style)

This basin sous vide has a variable temperature range of 104°F to 194°F, just low enough for our low-temperature fermenting species like *L. reuteri*. Unlike some other retailers who raised their prices skyward with the attention my yogurt-making conversations have prompted, this device is still reasonably priced under \$120 on the Dash Amazon store.

Instant Accu Slim

This stick sous vide from the same company that makes Instant Pots has a wide temperature range of 68°F to 203°F and adjustable timing control. It is priced around \$80.

Instantpot.com

Anova Culinary Sous Vide Precision Cooker Nano

This stick sous vide is the least expensive of the several Anova sous vide devices because of its low wattage. But, for yogurt-making purposes, this low-wattage device works fine. Temperature range is 32°F to 197°F, with an impressive 0.1°F accuracy. The device also connects to your smartphone via Bluetooth.

Anovaculinary.com

Yogurt Makers

Many yogurt makers are preset to maintain a temperature range of 108°F to 114°F. Whereas this is great for conventional yogurt making, it kills some of the microbes that we are interested in, such as *L. reuteri*. If you have a conventional temperature preset yogurt maker, run the device for a couple of hours with a thermometer inserted to assess the actual temperature. If too hot, you will need to obtain another device.

Here are some good choices among yogurt makers, with variable temperature and timing controls:

MV Power

This low-cost (around \$33) option is a favorite, with variable temperature (68°F–131°F) and timing (up to 48 hours) controls. Amazon has been the most popular source for this device.

Luvelle

The Luvelle yogurt maker is another popular brand for making yogurts at various temperatures. Downside: Three temperature choices are preset: 97°F, 100.4°F, and 104°F, meaning the occasional microbe (e.g., *Bacillus coagulans*) cannot be fermented at its ideal temperature. The device also has to be reset after running for 24 hours.

Luvele.com.au

Suteck

The Suteck yogurt maker is available for modest cost and is programmable for up to 48 hours of fermentation with a variable temperature range of 68°F to 131°F. Walmart (and Walmart.com) and Amazon are among the sources for this device.

Instant Pots

Many people have had success using their Instant Pots if a yogurt setting is available. (Contrary to the instructions included with these devices, we do not preheat pasteurized dairy because we are using higher-fat half-and-half and similar starting liquids that do not improve with preheating, unlike

skim or low-fat milks.) The only difficulty is that the yogurt temperature setting is preset on most older models. If you have a preset yogurt temperature, run the device with some water and a thermometer to assess the actual temperature achieved.

Newer devices allow you to vary the temperature, but, once again, verify with a thermometer before committing.

Other

Brod & Taylor has an oddly named device called a “Folding Proofer and Slow Cooker.” Don’t be scared away by its claim to be a “Breadmaker’s dream machine” because it can be repurposed for yogurt making and other fermentation projects. This device has a wide temperature range of 70°F to 195°F. The device is more costly than others, at around \$170, but it also serves as a slow-cooking device.

Brodandtaylor.com

APPENDIX B

ERADICATING YOUR FRANKENBELLY: SUPER GUT SIBO AND SIFO PROTOCOLS

ONCE YOU HAVE IDENTIFIED AND/OR CONFIRMED SIBO BY, FOR example, high H_2 readings on the AIRE device (see page 112 for instructions on how to use), you have the option of addressing overgrowth of the unhealthy bacterial species that have ascended in your gastrointestinal tract to where they don't belong.

For ideal results, we currently combine at least some antifungal efforts with SIBO efforts because fungal overgrowth accompanies SIBO in at least a third of cases and because reducing bacterial populations often invites fungal overgrowth. Recall that you also have the option of putting the Super Gut SIBO Yogurt to work in place of herbal antibiotics, based on its capability, in preliminary testing, to normalize breath H_2 . (You should still consider adding antifungal efforts.)

SUPER GUT SIBO PROTOCOL

You have some choices to make in addressing SIBO:

1. **Herbal antibiotic regimen:** Choose between the CandiBactin-AR/BR or the FC-Cidal + Dysbiocide regimen.

2. **Super Gut SIBO Yogurt:** You can choose this yogurt to manage your SIBO in place of herbal antibiotics.
3. **Antifungals:** We include curcumin regardless of whether you have SIFO. If you believe that you do indeed have SIFO, then you can add the additional strategies listed below for SIFO.

Herbal Antibiotics

Take an herbal antibiotic to purge pathogenic species from the upper GI tract. Two herbal antibiotic regimens have proven efficacy: CandiBactin-AR + CandiBactin-BR and FC-Cidal + Dysbiocide. Choose one of the two and follow the regimen for fourteen days or until prebiotic fiber challenge yields low values (less than 4) on AIRE device readings (low H₂ readings after consumption of prebiotic fiber).

CandiBactin-AR: 1–2 capsules twice per day, and CandiBactin-BR: 2 capsules twice per day, for 14 days

Or

FC-Cidal: 1 capsule twice per day, and Dysbiocide: 2 capsules twice per day, for 14 days

Super Gut SIBO Yogurt

Make and eat Super Gut SIBO Yogurt in place of herbal antibiotics. This is the yogurt you can choose to consume in place of herbal antibiotics that has, in preliminary experience, normalized breath H₂ readings, which means it purges the upper GI tract of problematic microorganisms. Because it is a probiotic preparation, not an antibiotic, people have had success by consuming this yogurt for four weeks rather than the two weeks of antibiotics. The three species in this yogurt should be co-fermented at 106°F. To hear the latest in our emerging experience with this SIBO-fighting yogurt strategy, join my conversations at www.DrDavisInfiniteHealth.com.

Super Gut SIBO Yogurt: ½ cup per day

Here is a quick refresher on which specific strains to use in making Super Gut SIBO Yogurt. See the text in the Week 4 section for all the details of the yogurt-making process:

- *Lactobacillus reuteri* DSM 17938, ATCC PTA 6475

The BioGaia Gastrus tablets are available through Amazon as well as BioGaia's US distributor Everidis.

www.everidis.com

- *Lactobacillus gasseri* BNR17

L. gasseri BNR17 is available from Mercola Market: www.mercolamarket.com. Look for a product called "Biothin Probiotic" with 10 billion CFUs per capsule.

- *Bacillus coagulans* GBI-30,6086

B. coagulans is available as the Digestive Advantage product from Schiff that is widely sold by many major retailers and online sources such as Meijer and Walmart.

Add curcumin. Regardless of whether you choose either herbal antibiotic regimen or the Super Gut SIBO Yogurt, I believe that it is a good practice to add curcumin. Because of its antifungal and intestinal barrier-strengthening effects, add curcumin in a nonabsorbable form, 300 milligrams twice per day, building up to 600 milligrams twice per day over several days.

Curcumin: 300–600 milligrams twice per day, for 14 days

Super Gut SIFO Protocol

If you are pursuing an antifungal campaign without addressing SIBO, begin curcumin 300–600 milligrams twice per day and add one or two

food-sourced essential oils (oregano, cinnamon, or clove) to your regimen. Remember: *Never* take the oils directly or undiluted. Start with one or two drops of essential oil diluted in 1 tablespoon of olive, avocado, or coconut oil (melted) twice per day, and build up gradually to five or six drops per tablespoon of food oil for a minimum of four weeks or until signs of fungal overgrowth have receded.

If you began with an herbal antibiotic regimen, or if you consumed the Super Gut SIBO Yogurt for SIBO: Continue curcumin: 300–600 milligrams twice per day, and add one or two essential oils of oregano, cinnamon, and/or clove diluted in 1 tablespoon of food oil for at least 4 weeks. Start with one or two drops of essential oil diluted in 1 tablespoon of olive, avocado, or coconut oil (melted) twice per day, and build up gradually to five or six drops per tablespoon of food oil for a minimum of four weeks or until signs of fungal overgrowth have receded.

You can enhance the likelihood of a successful response to your SIBO efforts by considering the following two additional strategies:

1. **Biofilm disruption: Add N-acetyl cysteine for its biofilm-disrupting capabilities.** Adding an agent that disrupts the biofilm that bacteria create can increase the efficacy of the herbal antibiotics. Biofilms provide a hiding place for microbes and make them less susceptible to antibiotics. Our biofilm disrupter of choice, given its long and proven track record, is N-acetyl cysteine (NAC).

Efforts to disrupt biofilm with NAC are not required during antifungal efforts because the essential oils of oregano, cinnamon, and clove provide biofilm disruption.

N-acetyl cysteine: 600–1,200 milligrams twice per day with herbal antibiotic, for 14 days

2. **Prevent sporulation: Add back prebiotic fiber to your diet.** Some bacteria can enter a spore-forming stage during their life cycle and thereby become impervious to antibiotics. Providing prebiotic fibers may help prevent bacteria from entering this mode, making them more susceptible to the antibiotics. After several days of antibiotics, you will likely be able to add back prebiotic fibers to which you may previously have been intolerant. Increase prebiotic fiber intake, as tolerated, up to a long-term target intake of 20 or more grams

per day. Sources such as legumes, garlic, asparagus, leeks, dandelion greens, jicama, raw white potato, unripe banana, inulin powder, pectin, and acacia fiber are good sources of prebiotic fibers.

Prebiotic fiber: 20 grams or more per day; eat some prebiotic fiber at each meal

PREVENT SIBO RECURRENCE

Continue eating prebiotic fibers, add a multispecies probiotic supplement, and add fermented foods to your diet to prevent recurrences of bacterial and fungal overgrowth. SIBO and SIFO commonly recur. It is not entirely clear why recurrences happen, but the most likely explanations involve continued exposure to an unhealthy diet (i.e., a diet containing grains and sugars), intestinal wall inflammation, a defective mucus barrier, or failure to sufficiently reduce undesirable species. To reduce the potential for future recurrences, once you complete the course of herbal antibiotics or Super Gut SIBO Yogurt, continue to include prebiotic fibers every day. Add a high-potency, multispecies probiotic (see the list of preferred products in Appendix A); include fermented foods such as kombucha, fermented sauerkraut, kefir, and fermented vegetables; and add *L. reuteri* yogurt (see below). If the AIRE device is available, monitor for and assess recurrences by taking an H₂ reading after prebiotic fiber challenge. Note that you must stop eating *L. reuteri* yogurt two weeks prior to any AIRE testing to avoid false positives.

ROLE OF *L. REUTERI* YOGURT IN PREVENTING SIBO/SIFO RECURRENCES

Recall that *L. reuteri* is unique among probiotic microbes in that it naturally colonizes the upper GI tract and produces bacteriocins, both of which provide advantage in preventing SIBO and SIFO. *L. reuteri* yogurt is therefore included in our efforts to prevent recurrences of SIBO and SIFO after these conditions have been managed initially.

However, there is a complication. Whereas *L. reuteri* yogurt likely helps eradicate or prevent recurrences of SIBO, it also generates positive H_2 readings on the AIRE device, making it impossible to distinguish SIBO from the H_2 generation by healthy *L. reuteri*. If you plan to use the AIRE device to track H_2 readings during or immediately following a course of herbal antibiotics, you should stop consuming *L. reuteri* yogurt for at least two weeks until negative H_2 readings are obtained, then resume enjoying this yogurt and all its benefits.

METHANOGENIC SIBO

For methanogenic SIBO, follow the same protocol as for H_2 SIBO using the CandiBactin-AR/BR regimen. Alternatively, the Super Gut SIBO Yogurt can be consumed for four weeks, since preliminary evidence suggests that *L. reuteri* reduces methanogens. You can assess your breath methane levels with a prebiotic fiber challenge after completing the herbal antibiotic or Super Gut SIBO Yogurt regimen.

H_2S SIBO

Stay tuned to our online discussions as we discuss and experiment with the evolving science around hydrogen sulfide gas measurement as related to the microbiome. We're likely to uncover a great number of cases of SIBO in people who test negative for H_2 and methane but positive for H_2S .

APPENDIX C

ERADICATING *H. PYLORI*

IF YOU HAVE TESTED POSITIVE FOR *HELICOBACTER PYLORI* (USING an *H. pylori* fingerstick antibody or stool antigen test), here are strategies to consider that have proved to contribute to eradication of this bacterium, which is associated with long-term health complications. Because of the increasing failure of conventional antibiotics to eradicate *H. pylori*, there is abundant evidence for the efficacy of such “alternative” therapies.

To document successful eradication, a stool antigen test (but not the antibody test, which remains positive even after eradication because you now have antibodies against this species) can be repeated after the course of treatment.

Probiotics: Probiotics alone have not been shown to eradicate *H. pylori* but have been demonstrated to modestly improve treatment efficacy when combined with conventional therapy, though the specific species responsible for these effects are not clear. The *Lactobacillus reuteri* strains that we use in our yogurt have also been shown to suppress (though not eradicate by themselves) *H. pylori* through production of antibacterial bacteriocins and hydrogen peroxide. *L. reuteri* is also resistant to stomach acid and can colonize the stomach, effects that allow it to protect against *H. pylori* overpopulation. *Lactobacillus rhamnosus* GG has also been shown to help suppress *H. pylori*.

***Nigella sativa*:** The seeds of this plant have been used for thousands of years in southern Europe, the Middle East, and Asia to treat a variety of disorders, and they can be eaten as a food, used much like poppy seeds to top baked products. *Nigella* has come under study most recently as a source of antibacterial compounds. A recent small clinical trial demonstrated that 2 grams (approximately 1 level teaspoon) of ground nigella seed eradicated *H. pylori* in 67 percent of participants, making it nearly as effective as conventional triple therapy. *Nigella sativa* seeds are available from a number of online retailers. Add nigella to yogurt and smoothies, or sprinkle it on food.

Mastic gum: The oddly named mastic gum is a traditional food and folk treatment for stomach upset in Greece and the Mediterranean that dates back twenty-five hundred years. It is sourced from an evergreen shrub that grows in that region. There is evidence that even 1 milligram per day taken over two weeks can eradicate *H. pylori* and thereby heal peptic ulcers, though higher doses were typically used in the few small clinical trials. In one study, 350 milligrams three times per day and 1,050 milligrams three times per day over fourteen days eradicated *H. pylori* in one-third to one-half of participants.

Bismuth subsalicylate/subcitrate: Available over the counter as Pepto Bismol tablets and liquid, bismuth was the original treatment for *H. pylori* in combination with H_2 blocking agents. This antacid and antidiarrheal was, in the early history of *H. pylori* eradication efforts, nearly as effective as modern triple or quadruple therapy, but it has become less effective in recent years. However, it may still provide advantage when used in combination with other agents.

Vitamin C: Five hundred milligrams of vitamin C twice daily taken orally has, in several studies, demonstrated an *H. pylori*-reducing or eradicating effect, particularly when used along with other therapies. This may be due to vitamin C's ability to block the urease enzyme expressed by *H. pylori*.

N-acetyl cysteine (NAC): NAC is a biofilm disrupter, that is, it disrupts the layer of mucus that *H. pylori* produces for its own protection. When used in combination with other therapies, 600 milligrams of NAC twice per day has been shown to substantially improve treatment efficacy, including in people who have proven resistant to conventional treatment, presumably by making the organism more susceptible to antibiotics.

A combination of natural agents used in a small study of thirty-nine participants successfully eradicated *H. pylori* in twenty-nine people (74.3 percent), as confirmed by stool antigen testing. These results are on a par with conventional three- and four-drug treatments. The following regimen was used:

- Mastic gum (Jarrow Formulas): 500 milligrams, 1 capsule three times daily
- Emulsified oil of oregano as ADP (anti-dysbiosis product; Biotics Research Corporation): 50 milligrams, 1 tablet three times daily
- Pepto Bismol: 4 to 6 tablets daily in divided doses between meals

In addition, a probiotic containing 5 billion CFUs of ten species taken twice daily (Vital 10; Klaire Laboratories) and a prebiotic fiber supplement were included.

