



## The Culinary Institute of America

# Olive Oil and the Plant-Forward Kitchen

*Inspiration from the Mediterranean Diet for Contemporary American Cooking*

### Introduction and Overview

Recognized by UNESCO as a World Intangible Cultural Heritage and now considered a matter of settled science, the olive oil–rich, traditional Mediterranean diet has been widely inspiring healthier food choices among Americans for more than two decades. Over that time, we have come to accept olive oil as part of the American market basket, not just an exotic ingredient belonging to other distant cultures. And further, we have come to understand that, like wine and some foods, there is a *whole world* of olive oil—full of varieties, styles, aromatics, and markers of excellence.

Today, as chefs and consumers are expanding their aspirations for change around food, health, sustainability, and food system innovation—together with a wider appetite for culinary discovery—a new vision of an American, plant-forward kitchen is capturing our attention. Relying on both global flavors and seasonal, regional, and even hyper-local ingredients, chefs and home cooks alike are embracing plant-forward ideas in the kitchen that reflect human and planetary health imperatives and simultaneously embrace new pathways towards deliciousness.

Let's explore, then, the substantive ways that the plant-forward, olive oil kitchen—rooted in the Mediterranean but now being reimagined as well in America and beyond—can leverage flavor and expand our repertoire of culinary techniques as we craft the future of our food.

### **Menus of Change: An Integrated Vision of Healthy, Sustainable Menus**

In 2012, the CIA expanded our longstanding collaboration with the Harvard T.H. Chan School of Public Health, Department of Nutrition to annually, jointly present **Menus of Change: The Business of Healthy, Sustainable, Delicious Food Choices**, a leadership conference and

initiative supporting innovation in the foodservice industry at the intersection of optimal nutrition and public health, environmental sustainability and social responsibility imperatives, business insight, and the pursuit of deliciousness.

The Menus of Change Scientific and Technical Advisory Council—whose membership of scientists and other academic and technical experts is drawn from a wide range of institutions and disciplines—sifts through the relevant science and each year updates its findings in the *Menus of Change Annual Report* on the future of food. Our Business Leadership Council works to connect this science with the creation of new business strategies and models to support successive stages of innovation and entrepreneurship projecting forward towards mid-century.

The Menus of Change 24 Principles of Healthy, Sustainable Menus, reflecting this combined guidance, call on chefs and business operators to “leverage globally inspired, plant-forward culinary strategies” in which we “think produce first,” “move legumes and nuts to the center of the plate,” “choose healthier oils,” “go ‘good fat,’ not ‘low fat,’” “make whole, intact grains the new norm,” “serve more kinds of seafood more often,” and “serve less red meat, less often.” For more information, please visit “Principles of Healthy, Sustainable Menus” at [www.menusofchange.org](http://www.menusofchange.org).

Menus of Change provides the foodservice industry with an integrated, evidence-based vision that acknowledges and addresses the negative impacts of many of our food choices on our planetary resources, climate change, and the scale of the diet-linked global chronic disease burden. It also squarely considers the unsustainability of current world dietary trends around animal protein–centric menus and dietary patterns given a projected planetary population of nearly 10 billion people in 2050. Informed by the best available science and equipped with an integrated set of principles, strategies, and resources to support change, American chefs and operators have accelerated their efforts—and their successes—in meeting these challenges across a whole range of restaurant and foodservice industry subsectors. From fine dining to fast casual and from hospital and corporate dining to K-12 and university foodservice, amazing positive change is reshaping our menus and our food systems.

### **The Plant-Forward Kitchen: The Mediterranean as Inspiration**

As an outgrowth of its Menus of Change initiative, the CIA—together with the Harvard Chan School, Department of Nutrition—distilled much of the initiative’s nutrition and sustainability guidance into a single phrase to help how chefs and foodservice operators think about the future of their work around menu innovation: “plant-forward.” At the CIA’s new [Plant-Forward Kitchen](http://www.plant-forward-kitchen.com) website, we describe “plant-forward” as:

“A style of cooking and eating that *emphasizes and celebrates*, but is not limited to, foods from plant sources—fruits and vegetables (produce), whole grains, legumes (pulses), nuts and seeds,

plant oils, and herbs and spices—and reflects evidence-based principles of health and sustainability.”

Because chips and soda can also be thought of as plant-forward, we added the following qualifiers drawn from the [Menus of Change 24 Principles of Healthy, Sustainable Menus](#).

Healthy, sustainable, plant-forward food choices are those that:

- Center around minimally processed, slow-metabolizing plant-sourced foods: fruits and vegetables (produce), whole grains, legumes (pulses), nuts and seeds, healthy plant oils, and herbs and spices. For protein sources, such choices lead with plant protein.
- Can include animal-based foods in a reduced (optional) role, with a special emphasis on decreasing purchases of red meat and minimizing foods sourced from animals raised with the routine, non-therapeutic use of antibiotics. These choices prioritize fish and poultry among animal-based proteins, with healthy dairy options and eggs playing a supporting role (if desired).
- Highlight the value of fresh, seasonal, locally produced foods; minimize sugary beverages and added sugars and sweeteners; and reduce sodium and unhealthy additives.
- Emphasize healthy dietary patterns and a rich diversity of whole foods versus an undue focus on specific nutrients and percentages; avoid excess quantities of calories but first ensure calorie quality.
- Celebrate cultural diversity, personal needs and preferences, and the unapologetic elevation of deliciousness, including room in our diets for foods of special occasions.
- Begin with transparent ingredient sourcing that supports sustainable farming methods and fisheries.
- Through food purchasing patterns, encourage innovation in retail food and restaurant concepts and business models to advance public health, social well-being, and our food system.

Importantly, the term plant-forward is designed to include three approaches to increasing plant-based foods in the diets and on our menus: 1) an omnivore or flexitarian approach, 2) vegetarian, and 3) vegan. “Plant-based”—in describing an entire dietary pattern—is often equated with vegetarian and/or vegan, whereas “plant-forward” speaks to the preferences of a larger demographic group interested in pursuing healthier, more sustainable plant-rich diets that can include modest amounts of fish, poultry, dairy, eggs, and even the occasional hamburger or small steak. A recent [Nielsen Homescan](#) survey reported that 39% of Americans are “actively trying to eat more plant-based foods.”

This description of plant-forward is a good match with the traditional, Mediterranean diet as codified now in the scientific literature and inspired, in part, by the cultural models of healthy eating one found in Crete, the rest of Greece, southern Italy, and many other parts of the Mediterranean in 1960.

In Crete in 1960, for example, researchers found that residents consumed, on average, as little as 35 grams (a bit over one ounce) of red meat and poultry combined per person per day. And this is at a time when these same residents of Crete witnessed more than 90% fewer incidences of heart disease compared to Americans at that time, and Greece overall had the highest adult life expectancy in the world.

Yes, there are animal foods in the traditional Mediterranean diet—in much more modest amounts than we are used to in the U.S. or Northern Europe—but our interest here is what made the *plant* parts of the plant-forward Mediterranean kitchen so pleasurable for those who lived in those cultures at that time, as well as now. In other words, what was it about the region’s culinary strategies and techniques in preparing fruits and vegetables, grains, pulses, and nuts that was so compelling?

One reason, underscoring the role of olive oil in the plant-forward kitchen—and why Mediterranean populations outstrip Americans in the quantity of vegetables they consume—was perhaps best articulated by veteran Greek nutrition researcher Antonia Trichopoulou, MD, PhD, president of the Hellenic Health Foundation and director of the WHO Collaborating Center of Nutrition at the University of Athens Medical School (paraphrasing): “It’s not that we Greeks necessarily like vegetables any more than you Americans do. The difference is in how our vegetables are prepared: with olive oil.”

### **Olive Oil, Sustainability, and the Plant-Forward Kitchen**

At a time when chefs and consumers are increasingly gravitating to the plant-forward kitchen not just because of health concerns but also because of sustainability imperatives, it is timely to understand that olive oil and the plant-forward kitchen can make important contributions on this front as well.

Abundant scientific evidence indicates that the plant-forward kitchen in general—with at least a substantial shift in cooking and dietary patterns towards plant-based foods—reduces GHG emissions from food production and mitigates climate change, cuts water usage and pressure on other natural resources, and preserves biodiversity.

The contribution of olive tree cultivation and olive oil production towards increased sustainability is also considerable. Olive orchards, especially in the Mediterranean region, are a barrier to desertification and erosion. Indeed, olive trees can grow in extreme conditions of

climate and geography; 70% of the world's olive orchards are entirely rain-fed. In a recent [presentation](#) by the head of the environmental R & D department of the International Olive Council (IOC), Francesco Serafini, to COP 22 (Conference of the Parties to the United Nations Framework Convention on Climate Change), the IOC noted that “olive orchards are a CO<sub>2</sub> sink, removing CO<sub>2</sub> from the atmosphere and fixing it in the soil. Olive trees are part of the solution to climate change.”

### **Purchasing Olive Oil: Quality, Grades, Excellence, and Cost**

Though much has been written about olive oil quality, how to purchase good olive oil, and related topics, it's helpful to summarize the basics and add a note about excellence in olive oil and cost considerations.

There are two principle grades of olive oil relevant to American consumers: “extra-virgin olive oil” and what is termed simply “olive oil.” According to the [International Olive Council](#):

- Extra-Virgin Olive Oil are oils which are obtained from the fruit of the olive tree through purely mechanical or other physical means (with no application of heat or chemicals), and which has a free acidity, expressed as oleic acid, of not more than 0.8 grams per 100 grams.
- Olive oil consists of refined olive oil with some amount of extra-virgin or virgin olive oil added back in for flavor.

In order for olive oils to be classified as extra-virgin, they need to be free of defects. Of the various things that could go wrong with olive oil when the olives are harvested from the trees, transported to the mills, and undergo pressing and processing, rancidity is most likely the defect that more consumers are familiar with, having had experience with rancid nuts and other instances of rancidity with oils and oils in food.

However, assuming the olive oil is shipped defect-free, how it is handled by wholesalers, retailers, restaurants and home cooks is still important. Remember that the great enemies of olive oil quality are heat (other than for final cooking), light, and oxygen. Hence the message to all of us: store and handle olive oil *properly*. Extra-virgin olive oils, if properly stored and handled, should retain their quality attributes—including their distinctive taste and flavor profiles—for up to two years. But even after two years, the basic health-promoting chemical structure of the oils can remain for some additional time—again, if properly stored—even if the aromatics have diminished.

Finally on cost: every year, more and more olive oil producers around the world are committing themselves to producing the highest quality olive oils, benefiting from the same kind of technical expertise and technologies that have transformed the global wine industry. In the

case of the very best oils—from producers aiming for true excellence and not merely good quality—one will see a higher cost just as one does with wines that similarly target excellence.

Amazingly, many of the same people who will not think twice about spending \$15 to \$25 on a bottle of wine that is consumed in a single evening will resist spending that much on a bottle of excellent olive oil that may last them several weeks. Clearly, a rethink is required on that front. But it also helps if consumers purchase more than one type of olive oil, at difference price points, to maximize their investment for varying uses.

For restaurants and chefs, the challenge is parallel but somewhat different: how to turn olive oil from a cost to a profit. No restaurant operator gives wine away for free, but most expect to not be able to charge for olive oil given out with bread at the start of a meal or used in the preparation of that meal. Some have experimented with charging for an olive oil service, which can make sense if the operator can reliably deliver a uniform, high-quality or excellent experience—and perhaps call out the provenance of the particular olive oil served and/or what makes it special. An alternative is to make sure the very best olive oils used in the restaurant truly shine in the eyes of the guest, have good visibility on the plate, and are additive to what customers value.

### **Varietals, Styles, and Flavor-Pairing Strategies**

As with the “world spice kitchen” and what we might call the “umami kitchen,” the Mediterranean-rooted “olive oil kitchen” has many layers of flavor, strategy, and technique to offer today’s culinary and public health leaders as we seek to meet the public’s growing appetite for plant-forward meals.

The world of flavor in olive oil excellence is large and varied. Assuming that one has secured good olive oil quality as a baseline—and is not dealing with a rancid or otherwise compromised or inferior oil—chefs and cooks have a big “tool kit” to draw on with the many varietals and styles found across the Mediterranean region and in other olive oil-producing countries.

Olive oil varietals with their respective flavor profiles range from, for example, Hojiblanca and Picual in Spain, Coratina and Frantoio in Italy, Kalamata and Koroneiki in Greece, and Chemlali and Chetoui in Tunisia to Cobrancosa and Galega in Portugal, Lucques and Picholine in France, and Meslalla in Morocco. Olive oils can be made from a single varietal, such as Arbequina, or from blends of varietals, such as with the classic Tuscan blend of multiple olive varieties. Just as the world of wine invites us to sample grape varietals widely, the merit of exploring the wide spectrum of olive oil varietals holds strongly as well.

When olives are harvested makes a tremendous difference in flavor. Early harvested olives produce a green fruity flavor—typically with more intensity of flavor, including more or less

bitterness and pungency. Olive oils that are harvested later—from the exact same varieties—will have more ripe fruit flavors, and will usually exhibit more rounded, milder, and more delicate flavors.

In competitive olive oil judging, again setting defects aside, one looks for the positive presence of green or ripe fruit and, as appropriate to the oil, bitterness and pungency (the latter creating the peppery sensation that sometimes makes one cough). Then the oils are evaluated in terms of complexity, harmony, balance, and persistence. As with good and great wine, excellent olive oils demonstrate a “whole that is greater than the sum of its parts” quality.

Through its prestigious, annual Mario Solinas Quality Awards program, the International Olive Council recognizes four categories of excellence:

- Intense green fruitiness
- Medium green fruitiness
- Mild green fruitiness
- Ripe fruitiness

But perhaps the real adventure with olive oil comes when one delves into the world of additional sensory and flavor attributes of extra virgin olive oils including such possible characteristics as fresh-cut grass, artichoke, tomato leaf, green apple, citrus, ripe fruit, buttery, and nutty. Some of these characteristics will be more fragile on the palate, and are best experienced in simpler culinary preparations where the oil is added in its raw, non-cooked state.

Spider plots, combining all of these elements and deployed by some of the world’s leading sensory scientists, create comprehensive sensory profiles that underscore just how much diversity exists in the olive oil world.

Armed with this background on olive oil varieties, styles, taste characteristics, and aromatics, one can explore the pairing strategies with food and extra virgin olive oils—just as one would with wine and food. One challenge quickly arises in pairing olive oils with foods that typically isn’t present with wine and food pairing: in the latter arena, all wines are crafted to be enjoyed on their own, and while they can be enjoyed with food they are not dependent on that experience. For most people, olive oil is not something that is eaten separately from food. Thus, for chefs and home cooks wanting to please their guests: if they (the guests) don’t have a high level of olive oil literacy and show aversion to the intense or medium green fruitiness attributes of bitterness, astringency, and pungency, they might not easily get beyond their initial negative reaction to such oils by themselves, let alone when incorporated into cooking and foods. In this case, the cook or chef needs to think about creating the perfect, engaging food pairings or

experience(s) that blends various elements and that may lead to a sensory epiphany without first ending in avoidance or rejection.

Much of Western cooking and food experiences celebrate harmony and perfection in the blending of flavors (e.g., saucemaking in the French kitchen). While excellent olive oil can also play at this game (e.g., cod or hake in pil-pil sauce), the *contrasting* quality of intensely fruity and medium fruity olive oils when applied as a condiment to the appropriate foods just at the time of service—in the kitchen or at the table—can offer an equally appealing experience, one of complexity, surprise, and intrigue. The bitterness and peppery quality (the pungency) of some intensely fruity extra virgin olive oils when applied as a condiment to, say, a bean soup or a soft, fresh cheese offers yet another dimension—that of the “attack and decay” phenomenon one experiences when these previously separate, contrasting elements are slowly blended on the palette.

Sara Spinelli, in her article “Investigating the Culinary Use of Olive Oils” (*Olive Oil Sensory Science*, 2014) nicely frames up the unique contribution this class of extra virgin olive oils can make in “achieving this ‘struggle’ between sensory contrast and sensory balance, which is extremely important for the success of culinary preparation.”

In general, though, we don’t know enough about how to engage consumers in the world of olive oil, especially within the context of the substitution of olive oil (a healthy fat) for butter (an unhealthy fat) across multiple applications. But recent, important consumer and sensory research in this area has been done, and should be built upon. A good example of this is the 2018 doctoral thesis of Sara Kathy Yang (University of California, Davis), “Sensory and Culinary Strategies for a Shift to a Plant-Forward Diet: Can Extra Virgin Olive Oil Replace Butter?” This project was undertaken under the auspices of the Healthy Flavors Research Initiative, a joint initiative of the University of California, Davis (including the UC Davis Olive Center) and The Culinary Institute of America.

### **In the Heat of the Kitchen: Cooking with Olive Oil**

There is a lifetime of culinary pleasure and experimentation to be experienced with olive oil if one never actually heated the oil, but rather simply used it in raw or cold preparations and as a finishing condiment. However, applying heat to olive oil—and cooking with it—adds other layers of culinary possibility.

In general, when using the best, most aromatic extra virgin olive oils—such as those with intense green fruitiness or medium green fruitiness—it is best to cook at lower temperatures to preserve the aromatics. This is *not*, however, a matter of safety or smoke point, but simply flavor preservation (and the preservation of antioxidants and other healthful, bioactive compounds). As Catalan-born, Austin-based chef Daniel Olivella likes to emphasize, if when



making a sofrito—a base of many Catalan and Spanish dishes—one adds good olive oil and chopped onions to a cold pan and keeps the pan on lower heat for a longer period of time, the result will be delicious, still aromatic, melted onions. Chef Ana Sortun of Olena in Cambridge, MA follows a similar strategy, often keeping pan heat low and aromatic olive oils below a certain temperature as she builds flavor in her vegetable-centric, Eastern Mediterranean–inspired cooking.

Try cooking a soft scramble of eggs with an aromatic olive oil on low to medium low heat and you'll never think of eggs the same way again. Similarly, very simple pasta dishes—such as a spaghetti with only Parmigiano Reggiano cheese, some fresh cracked pepper, perhaps some fresh herbs, and a copious amounts of an excellent olive oil—benefit from adding most of the oil at room temperature or with minimal heating. The same is true for other low and slow Mediterranean preparations mentioned below.

The higher the heat and the more complex the preparation, the less important it is to use the most aromatic (typically expensive) oils, unless of course one's budget can afford excellence even here. But in this case, we still encourage the use of good quality extra virgin olive oil whenever an option.

Then comes the question that has generated much heat on the Web: can you (deep) fry with olive oil? First, let's state that yes, you can absolutely fry with olive oil with great results. But that is not really the right question to be asking. The *better* question is: what is the best way to deep fry with olive oil? And the following question: what should I consider when thinking about how to fry with olive oil?

Here's what you need to know, according to the technical experts at the [International Olive Council](#):

“Olive oil is ideal for frying. In proper temperature conditions, without over-heating, it undergoes no substantial structural change and keeps its nutritional value better than other oils, not only because of the antioxidants but also due to its high levels of oleic acid. Its high smoke point (210°C/410°F) is substantially higher than the ideal temperature for frying food (180°C/356°F).”

An interesting paper recently published in the journal *ACTA Scientific Nutritional Health* by Australian researcher C. Guillaume *et al.* reveals that there is more than a high smoke point that recommends olive oil for frying. They found, after heating a number of common oils including extra virgin olive oil (EVOO) to 240°C and then holding the oils at 180°C for 6 hours, that the “EVOO yielded low levels of (unhealthy) polar compounds and oxidative by-products (compared with other oils). EVOO's fatty acid profile and natural antioxidant content allowed the oil to

remain stable when heated (unlike oils with high levels of polyunsaturated fats [PUFAs] which degraded more readily).”

But turning once again to the issue of flavor preservation and cost (versus solely focusing on safety and health): If one is shallow frying small amounts of food where less oil is required (such as with pan-fried, blanched almonds), it will likely make sense to use a good-quality extra virgin olive oil—depending on budgets and desired flavor outcomes. In the case of deep frying, where large amounts of oil are required, many chefs and cooks will switch to the lesser expensive “olive oil” where one is getting some good olive oil flavor but not paying a premium for highly aromatic oil that will need to be replaced after four or five times of use. Of course, if budgets permit, there is no issue with using more expensive extra virgin olive oils as, again, they will be below the smoke point if proper, deep-frying techniques are followed.

If you haven’t tried deep frying with olive oil—or extra virgin olive oil—you are missing out on what Mediterranean people have enjoyed for centuries, from eggplant fritters to fried small fish to falafel.

One final note on frying: one area that deserved additional research is around variables affecting frying temperature when sautéing vegetables. When vegetables are sautéed in a pan with extra virgin olive oil, the high moisture content of the vegetables—depending on the type of vegetables, their configuration in the pan, and the amount of oil used—can contribute to keeping pan temperatures lower than what might be imagined, and thereby conserving more of the special flavors and other positive attributes of extra virgin olive oil.

### **Olive Oil, Vegetables, Pulses, and Whole Grains: Seasonality and Culinary Insight**

The contemporary plant-forward movement in the U.S. can also be characterized as “veg-centric,” that is focused on vegetables as the culinary stars. Foundational for success with vegetables in restaurant and foodservice settings is, of course, having the best possible, seasonal, high-flavor ingredients. Having secured that, the Mediterranean olive oil kitchen has much to offer in terms of culinary strategy.

Unfortunately, with changing lifestyles in most Mediterranean countries (i.e., less cooking at home), the influx of convenience and other processed foods, and the higher consumption of meat and other foods from animal foods than were typical of the traditional Mediterranean diet, many of the best examples of the vegetable-centric olive oil kitchen are disappearing or in retreat in terms of consumption and visibility. But American chefs and cooks can easily access many of these in excellent Mediterranean and Mediterranean-inspired cookbooks still in publication such as those highlighted in the CIA-EAT Plant-Forward Global 75: The Essential Cookbook List.

Where Americans have most embraced olive oil—including some of the world’s very best olive oils—is for salads and cold preparations. There is still much to learn here, though, including the size and depth of what we might call the Mediterranean olive oil “cold kitchen.” But even when making what we would consider a more contemporary, American salad, a spirit of discovery can bring important new results. Joshua McFadden, chef/owner of Ava Gene’s in Portland, OR and author of *Six Seasons: A New Way with Vegetables*, rethinks how to dress a salad to maximize aromatics and the overall taste experience: he advises to first add the vinegar, salt, and fresh-cracked pepper, toss—and only *then* add the olive oil, toss again, and serve and eat immediately. And this from someone who takes his oil very seriously: “Olive oil is a huge reason I enjoy cooking. I really would have no idea about how to make food taste good without it.”

Beyond salads, tapas, mezze, and a variety of cooked vegetable and mixed preparation dishes, a few additional strategies warrant our attention:

- On the one hand, Americans’ current obsession with the best possible produce simply prepared—and served raw or lightly cooked and still brightly colored—has produced many delicious food experiences. Few people would care to champion dull, grey, overcooked broccoli sitting on a steam table for a couple of hours. And yet, from a Mediterranean perspective, Americans are largely missing out on a whole category of vegetable (or vegetable and pulses) cooking the Greeks call “lathera.” These are essentially vegetables braised or stewed in olive oil with onions, garlic, tomatoes, various herbs (basil parsley, dill, mint, oregano, etc.), sometimes beans or other pulses, and then finished with more olive oil. The visual result is not necessarily cover material for a glossy American food magazine, but when made with peak-of-season produce and the best olive oils, the flavors are truly seductive. Importantly, the long, slow cooking preserves the aromatics in the oil, the produce, and the herbs.
- A related technique that holds great promise for American cooks and chefs is the use of sous vide for slowly cooking vegetables—or other foods to go into veg-centric meals—in olive oil. In restaurants, chefs often shy away from purchasing and using the best olive oils because of expense. Some years ago, Kyle Connaughton, chef/owner of SingleThread in Healdsburg, CA, presented the possibilities of sous vide in the olive oil kitchen to an international audience of top olive oil producers at a Beyond Extra Virgin conference in Cordoba, in the south of Spain. Chef Connaughton chose leeks to cook with a small amount of excellent olive oil—low and slow in sous vide, achieving meltingly tender but still-intact leeks which married the still-very-much-intact aromatics from both the oil and the leeks. The consensus in tasting the dish? A culinary triumph.
- Or for a memorable preparation of a classically veg-centric salade nicoise, use the sous vide method with the tuna in a stellar olive oil with either mild green fruitiness or ripe

fruitiness. Again, low and slow: yielding spectacular results at manageable costs. Vacuum technology can also leverage the flavor of small amounts of fine olive oil with great results through a process of pressurized marination.

- Cold, Mediterranean-inspired soup is another underleveraged item that should have more prominence on American menus. What would the south of Spain be without the justifiably ubiquitous gazpacho? But why not apply that same approach and technique to a host of cold, puréed soups for summers in the U.S.?
- Then, if one thinks of the imperative in the plant-forward kitchen to cook and consume more pulses—beans, lentils, and chickpeas—the olive oil kitchen has much to offer. Pulses are central to Mediterranean cooking, and olive oil is used as a flavoring at the start of the cooking process, at the end, or when added to more complex preparations such as the tempering oil that is used to finish Turkish red lentil soup just before serving, which often combines olive oil, dried mint, and Aleppo pepper. In Tunisia, the breakfast favorite lablabi (Tunisian chickpea soup) is made craveable by the addition of olive oil, harissa, garlic, and cumin to the chickpeas, and in Morocco, olive oil adds richness and flavor to harira, a spiced vegetable soup with chickpeas, lentils, cilantro, and lemon. In the south of France, the popular panisse, or chickpea fries, would be inconceivable without olive oil for frying. In the eastern Mediterranean, as Americans now know well, hummus is created as a purée of chickpeas, tahini, and olive typically served with a swirl of olive oil on top; and falafel, another chickpea prodigy and now a global favorite, is fried in olive oil.
- On the whole grain front, the Cretan dakos salad famously tops whole-grain barley rusks with grated tomato, fresh cheese, olives, capers, and copious amounts of local olive oil. Whole grains never tasted so good. Whole-wheat pasta with chickpeas (more chickpeas!) and olive oil—*ciceri e tria*—reminds us of the richness of the Pugliese kitchen of southern Italy.

### **Mediterranean Sauce-Making: Leveraging for American Menus**

Many would argue, with good reason, that the very best Mediterranean sauce is simply a great olive oil, well-chosen to match the food being prepared. However, across the Mediterranean region, one of the strokes of genius of the olive oil kitchen was the development of a whole collection of pounded or blended sauces that always include olive oil and garlic with ingredients ranging from nuts and seeds to spices, herbs, and other aromatics; tomatoes; peppers; eggplant; citrus; and/or yogurt. Variations of this focus on pulses with olive oil.

These sauces are typically raw (though they could include some cooked items) and served cold or at room temperature. They are sometimes used in foods (e.g., pesto added to pasta) but

more often than not they are served *with* foods or separately as a dip. The collection as a whole is a model of optimal healthfulness, blending together multiple health-promoting ingredients (e.g., extra virgin olive oil with tree nuts such as walnuts, almonds, pistachios, or hazelnuts). And yet most American chefs and cooks take very little advantage of this delicious chapter of the Mediterranean diet story, whether serving traditional versions or adapting to signature concepts.

Among this group of not entirely unknown but certainly underutilized sauces of the Mediterranean olive oil kitchen are these (listed with some common ingredients): romesco (roasted tomatoes, garlic, almonds or hazelnuts, and olive oil), tarator (walnuts, garlic, olive oil, and vinegar), muhummara (walnuts, peppers, olive oil, and pomegranate), tzatziki (yogurt, cucumber, olive oil, and dill), salsa verde (fresh herbs, garlic, olive oil, lemon, and capers), picada (roasted almonds, hazelnuts or pine nuts, garlic, parsley, and olive oil), ezme (tomatoes, red pepper, onions, garlic, lemon, parsley, mint, chile peppers, and olive oil), harissa (roasted and/or smoked peppers, garlic, coriander or cumin, and olive oil), and charmoula (garlic, cumin, coriander, lemon and/or preserved lemon, olive oil, cilantro, parsley, and mint).

As mentioned above, Americans are now very familiar with hummus (chickpeas with pounded sesame seeds, garlic, and olive oil) but much less so with the Santori-style fava (yellow split peas, cooked and raw onions, olive oil, and lemon).

### **Baking, Pastry, and Sweets: Olive Oil, A New Frontier**

Often American or other non-Mediterranean chefs and home cooks who are passionate users of olive oil have a blind spot when it comes to baking, pastry, and desserts. And yet here also olive oil and the plant-forward kitchen—based in traditional Mediterranean food cultures but not limited by them—have much to offer. If you have never had a semolina cake with ground almonds, citrus, and a medium fruity (or whatever your preference is) extra virgin olive oil, you have no idea what you have been missing. High-quality, extra-virgin olive oil brings amazing new flavor dimensions to cakes, cookies, breads, and more. (From a functional perspective, some modest adjustment will likely need to be made to the amount of olive oil used when swapping out butter.)

Similarly, the world of ice cream will never be the same once you discover what an aromatic, extra-virgin olive oil can do in this arena, whether paired with dark chocolate or flavors a bit more exotic including blood orange, passion fruit, saffron, rosemary, or fig.

With the CIA-Harvard Chan Menus of Change initiative, we speak of the healthy dessert market basket which includes fresh and dried fruit, nuts and seeds, dark chocolate, healthy fats and oils (e.g., extra virgin olive oil), whole grains, yogurt, herbs, spices and aromatics, and modest amounts of alcohol. As a pastry chef or home cook, if you brainstorm to connect that market

basket including peak-of-season fruit with the spirit of the Mediterranean olive oil kitchen, the opportunities for deliciousness abound.

The chairman of our Menus of Change Scientific Advisory Council, Walter Willett, MD, DrPH, professor and past chairman of the Department of Nutrition, Harvard T.H. Chan School of Public Health, has challenged pastry chefs throughout our country to think in terms of “The Three Pleasures”—i.e., what can you make with *only* fresh or dried fruit, nuts, and dark chocolate. It has been amazing over the past few years to see the creativity our nation’s talented pastry chefs have brought to this challenge. In the context of the Mediterranean-inspired olive oil kitchen and an expanded market basket of healthy baking and pastry ingredients mentioned above, the creativity should only blossom further.

And finally, on the baking and restaurant service front, there is this: as an industry, we need to replace much of the breads made from refined grains (i.e., white flour) with whole grains (including some intact whole grains). To the extent that we can increasingly serve well-crafted, whole-grain breads at the table in our restaurants with high-quality olive oil, we’ll be doing the health of our customers a big favor, and introducing them to a field of flavor discovery that too few know.

### **Olive Oil and World Cuisines, Modern Appetites**

There is an old saying in the world of food and cooking: “What grows together goes together.” Who needs more proof of that than the wonderful mingling of flavors in a classic Greek salad with aromatic summer tomatoes, farmer’s market cucumbers, some sheep’s milk feta, and a fine, fruity olive oil? Or the melding of flavors within a Tunisian or Moroccan vegetable-rich tagine, underpinned with a good olive oil and animated with the freshest spices from local souks? Or small plates of olives and almonds with a local, chilled Manzanilla Sherry in Andalusia?

And yet, with the world’s growing appetite for food and cultural discovery—and the juggernaut of world flavors that have transformed many American restaurants and home pantries in the last 25 years—one can see natural pairings for good olive oil across many food cultures. Of course, olive oil has a long history in some parts of Mexico and South America (what could be a more perfect match than avocado with fine olive oil, cilantro, chiles, lime, and a bit of salt?), but olive oil is now quickly being picked up by adventurous diners from Japan and China to South Asia and elsewhere—as well as in professional kitchens throughout the U.S. representing a wide spectrum of world cuisines and flavors.

If you like olive oil—especially really good olive oil with interesting flavor profiles—experiment with complementary and contrasting flavors from other culinary traditions. A simply conceived, roasted Kabocha squash soup with generous amounts of finely chopped ginger sautéed in extra

virgin olive oil with the addition of some chicken stock and finished with swirls of the best intensely fruity olive oil you can get your hands on is a thing of beauty. Be adventurous, try things, see what you like. And remember that those tomatoes we think of so much as a marker of local, iconic produce in Greece and Italy and most of those spices that enliven the tagines of North Africa—they didn't come from those places originally.

### **Olive Oil and the Plant-Forward Kitchen: A World of Discovery**

As we as individuals and as societies work to make better food choices—for our health and the health of the planet—it is both comforting and inspiring to know that previous cultures, such as those historically surrounding the Mediterranean Sea, developed flavors, foods, and cultural strategies that speak to today's most urgent imperatives around chronic disease prevention, resource depletion, and climate change. Truly, this is cultural heritage that is not simply about the past but also about our future—that is, if we embrace it, we help preserve these traditions and keep them relevant by also sometimes reimagining them, respectfully and creatively.

*This white paper was written in conjunction with an upcoming seminar to be held in New York City on June 26, 2019, "Olive Oil and the Plant-Forward Kitchen," a collaboration between The Culinary Institute of America and the International Olive Council.*

### **Resources**

The Culinary Institute of America <https://www.ciachef.edu/>

Guillaume C. *et al.* "Evaluation of Chemical and Physical Changes in Different Commercial Oils During Heating" ACTA Scientific Nutritional Health 2.6 (2018): 02-11

Harvard T.H. Chan School of Public Health, Department of Nutrition  
<https://www.hsph.harvard.edu/nutrition/>

International Olive Council <http://www.internationaloliveoil.org/>

Menus of Change, The Culinary Institute of America and Harvard T.H. Chan School of Public Health, Department of Nutrition <http://www.menusofchange.org/>

Nielsen HomeScan Survey <https://www.nielsen.com/us/en/insights/article/2018/plant-based-food-options-are-sprouting-growth-for-retailers/>

Plant-Forward Kitchen, The Culinary Institute of America <https://www.plantforwardkitchen.org/>

Spinelli, S. "Investigating the Culinary Use of Olive Oils," *Olive Oil Sensory Science*, edited by Erminio Monteleone and Susan Langstaff, p. 204, 2014 John Wiley & Sons

The American Journal of Clinical Nutrition, "Mediterranean Diets: Science and Policy Implications," June 1995, Volume 61, Number 6(S)

UC Davis Department of Food Science and Technology, Sensory and Consumer Science  
<https://foodscience.ucdavis.edu/research/sensory-science>

UC Davis Olive Center <https://olivecenter.ucdavis.edu/>

Olive Oil Times <https://www.oliveoiltimes.com/olive-oil-business/world-olive-oil-business/sustainable-olive-oil-production-can-help-mitigate-climate-change/53615>

Yang, S.K. Sara University of California, Davis, doctoral thesis (2018) "Sensory and Culinary Strategies for a Shift to a Plant-Forward Diet: Can Extra-Virgin Olive Oil Replace Butter?"