PRODUCT DEVELOPMENT

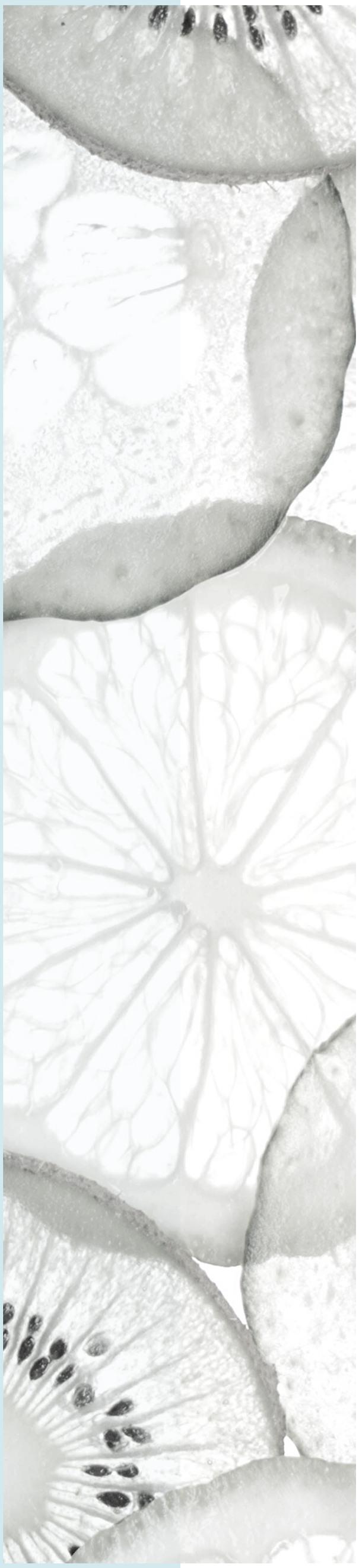
A MINI GUIDE TO UNDERSTANDING HOW TO BRING YOUR RECIPE TO SCALE UP

FIRSt

FOOD INNOVATION
& RESEARCH STUDIO

02

DECIDING IF YOU ARE READY TO SCALE UP



This mini guide is designed to help you decide if you are ready to start the process of home scale to scale up.

Before we begin, there is a **disclaimer.** The product development process is not one size fits all. Every food and beverage product is unique and there will ultimately be challenges that differ from product to product when scaling up.

It is important to note that your product will not be the exact same once you scale up. There are many variables that will have to change to get to the next level of production which will be discussed in this guide.

This guide will walk you through a fictional example of how this process would look, and some of the challenges to expect.

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INITIAL QUESTIONS TO ASK

Meet George...

George thinks he has the best **hot sauce** recipe in the world and has decided he wants to start selling it to people. However, in order for George to start, there are a few things he needs to consider.

1. Has he done enough research? Does he have a business plan? A **target market**? What is his value add to the market? Who are his **competitors**? *See Food and Beverage Start Ups Mini Guide.

2. Does he know where he is going to make his hot sauce? Does he have his own facility or will he have it **co-manufactured?** What equipment will he need?

3. What is the final product going to be sold in? Does he want it to be **shelf stable**? What about the packaging?

4. What is in his recipe? What are the **ingredients** and will he be able to source all of them in larger quantities? How will he keep his product **consistent?**

5. How will he keep his product **safe** for consumers? Does he meet food safety and regulatory needs?

Looks like George has a lot of questions that need answering. Once he has thought about all of these, he decides to go to **FIRSt** to talk to a **Food Scientist** on how they can help him navigate this process.

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RECIPE CHANGES

Scaled up batches of a product can be very different from the original recipe. It is important to recognize that your home recipe will not be exactly the same when you scale it up. This is due to a few things as listed below.

Change in processing

Ingredient sourcing

Targeting longer shelf life

Food Safety Requirements

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INGREDIENTS

The Food Scientist asks to look at the recipe as he needs to determine a few things for George. He thinks about these things below.

Functionality

Will the ingredients provide the same function as they do now in a smaller batch? Will you need a **technical ingredient** to help with a potential product defect?

Heat Transfer/Cooking

Are some ingredients heat sensitive? How will heat treatment or cooling impact the final flavour and colour quality of the product?

Cost

Are there any expensive ingredients that might make the overall cost too much?

Availability/Sourcing

Are there any seasonal ingredients in the recipe? Will you have trouble sourcing them?

George's Hot Sauce

George realizes that he goes to Chinatown and sources a special hot pepper for his sauce and might not be able to source it all year round and also might not be able to get enough for a larger batch. He also thinks that he will need to add a functional ingredient to help prevent the separation of his hot sauce. He notices on a small scale he see water separation at the top.

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UNITS OF MEASUREMENT

Next the Food Scientist discusses **Units of Measurement** for the recipe. Currently, George has all of his measurements in **Household measurements** (eg. Tbsp, Cup)

Household measurements are **not standardized units** and can vary from person to person. George needs to have all of his household measurements converted into a **standardized unit of weight and percentage.**

If we think about it, it is much easier to measure out 5 kg of water versus 1000 teaspoons of water on a larger scale.

The reason we need to standardized measurements is so that anyone making the formulation will make it the exact same way.

When scaling up, a theme we will review is **consistency**. We want to keep the product being made in a consistent way so it comes out the same every time for the consumer.

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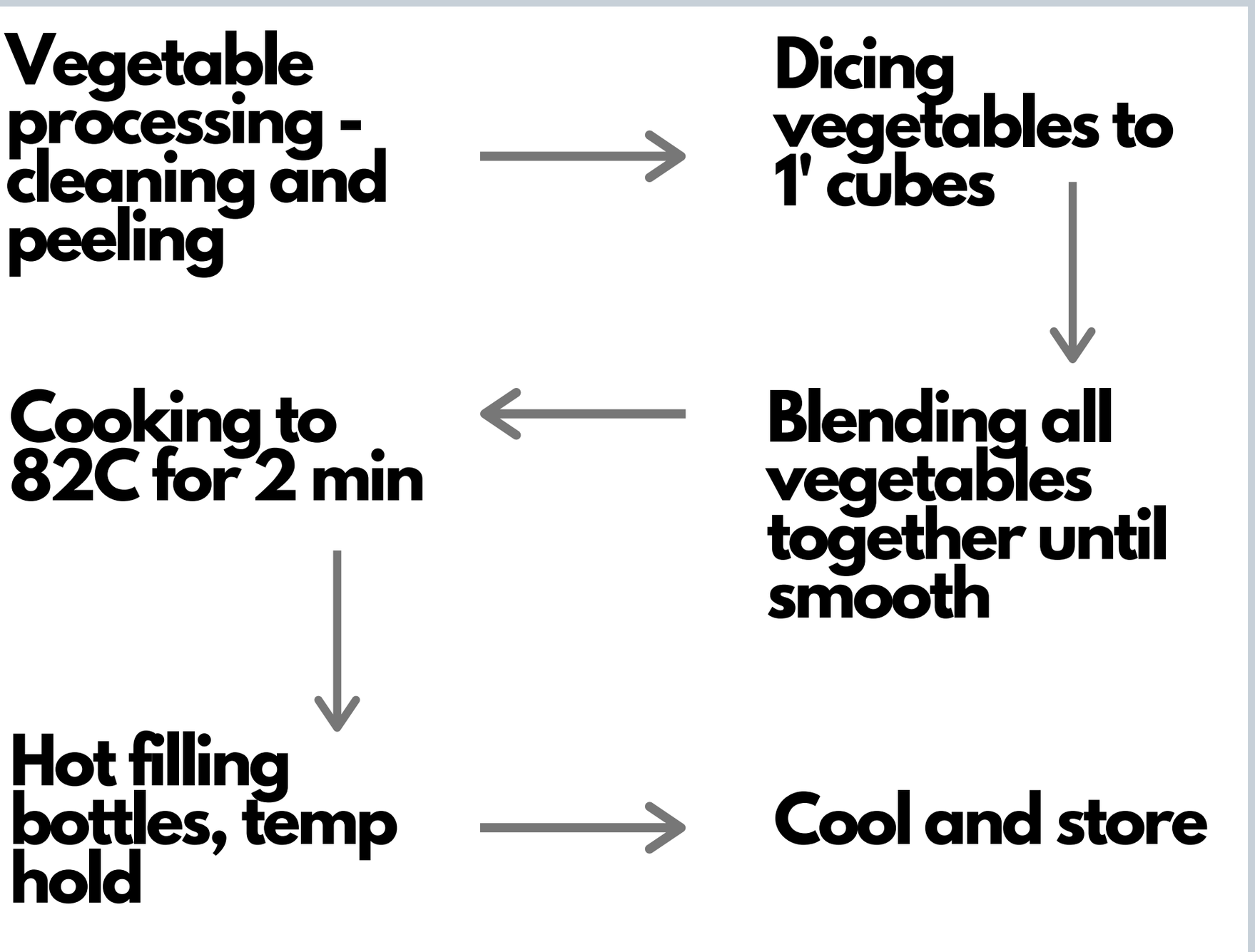
UNIT OPERATIONS

Unit operations are the steps you take to process your product. The Food Scientist helps George determine what these steps should look like for his hot sauce production. Steps can include processes like vegetable preparation (cleaning, peeling, dicing), cooking, cooling, packaging, freezing etc.



Above is an example of a **process flow diagram** of unit operations.

A Note on Food Safety

The Food Scientist will also need to determine the steps that will be considered **critical control points** to prevent the contamination of bacteria. *See mini guide on Food Microbiology for more details.

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UNIT OPERATIONS

George needs to consider what steps are **feasible** on a larger scale. What might have been okay to do by hand on a small scale, might be too much labour and will need to change. With the help from the Food Scientist, he will be able to determine how to keep each process step completed consistently.

Consistency

Let's talk about consistency. In order for George to produce a consistent product every time, he will have to set **quantitative parameters** around each process step/unit operation.

For example, the Food Scientist suggests a cooking procedure for George that should be completed the same every time. He sets a **time and temperature** at which the hot sauce has to stay at in order to complete the cooking process and prepare for his packaging.

Q/A

Quality Assurance will also be important for George. He will need to set product parameters to test on each final product to confirm it is the same as the last batch. These parameters can include **pH, water activity, colour, carbonation, Brix etc.**

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NEXT STEPS

Now that George has had help from FIRSt, he is well equipped to take the next step and move to the scale up phase with his hot sauce.

However, the process is not over! He will also need to consider a few more things as listed below.

Sanitation/GMPs

Traceability

Shared Kitchen Spaces

Food Safety Requirements

Regulatory Guidelines

But not to worry! FIRSt can continue to help with these next steps.

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ANY QUESTIONS - HOW CAN WE HELP?

If you think you are ready for the scale up phase of your business, FIRSt can help you with all of these steps mentioned in this mini guide. If you are not sure what to do next, we can also help you determine that.

We also offer a full suite of services pertaining to nutritional analysis, product development, market research, concept validation, regulatory assistance for the Canadian food regulations, and collecting consumer feedback to give you the data you need to succeed. If you're in-market already, we can optimize products you're struggling with, create line extensions, and help you scale-up to the next level.

Get in touch with us at:

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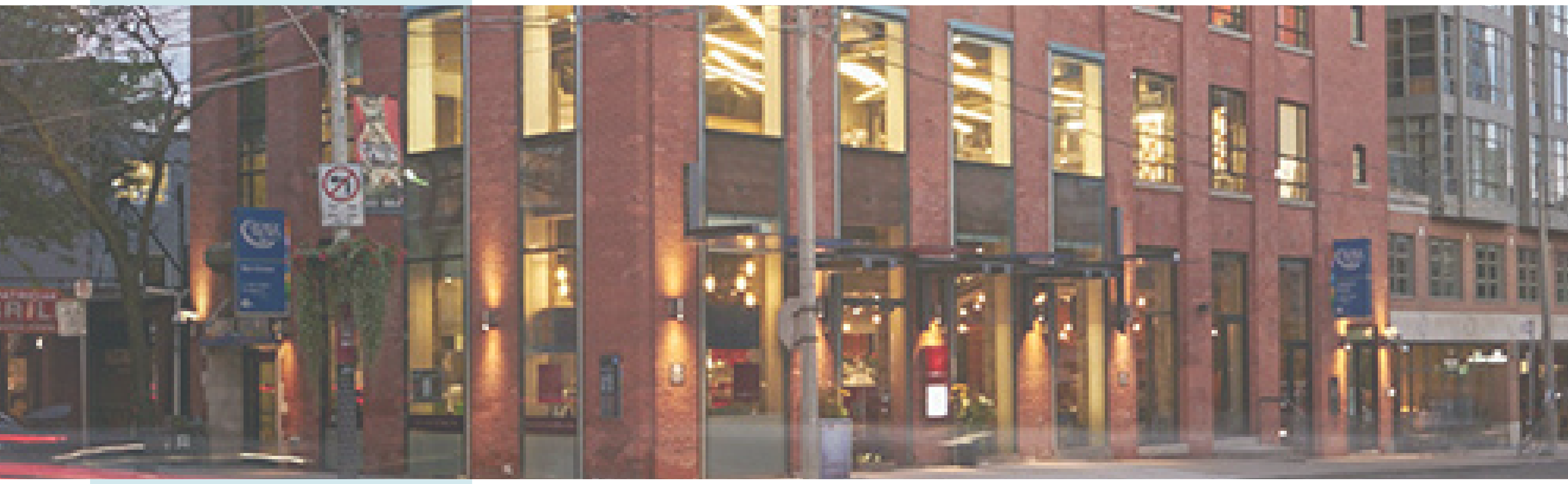

We also have a collection of Mini Guides you can check out! After reading this one you might be interested in our **Food Microbiology** series, more from our **Product Development** series, or our **Regulatory** series!