How to Start Your Own Lab (A Helpful Comprehensive Guide)

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So, you want to start your own lab? Maybe you just walked out of college, armed with your degree and a hunger for success; or maybe you're suffering from industry burnout, and you want to manifest your own destiny. There are myriad reasons to start a laboratory, and each person is going to have their own vision and unique objectives that push them into this ambitious project. But, like any other largescale endeavor, starting a lab requires a fair bit of initial thought, a highly strategic business plan, and some best-of-breed practices to achieve and maintain success.

Starting up a new laboratory is an exciting and challenging endeavor. The first thing to determine when starting up a new lab is what type of laboratory work that you'll be focusing on. Then you'll consider what specific equipment you'll need, and where you're going to obtain it. A well-funded

startup lab will be able to afford all new equipment, but if you're on a tight budget it might make more sense for you to purchase used equipment until your lab begins achieving some success.

It is important to note that each lab is going to vary in needs, goals, and workflows. Some of your initial planning will depend upon the funding that needs to be captured, upon your location, and upon your personal goals. But each new lab will undergo some similarities in the startup process.

This guide is to help scientists, visionaries and entrepreneurs to create a viable laboratory from the ground-up. These are some of the steps you will need to take to get started.

1. Research

Before you start grabbing accreditations, purchasing the appropriate supplies, and prepping for onboarding, you need to validate your business model. Why are you building a lab? What niche is your lab serving? How are you planning on running your lab? All of these questions require you to do some basic research.

Your research should be divided into two categories — broad and granular.

1.1 Broad Research

The first thing you'll want to do is to establish what niche your lab will fall into. What types of research are you most interested in doing, and what – if any – are the perceivable gaps in research coverage? What research areas have recently opened up by brand new, cutting edge technologies?

Once you have established your niche, you will want to answer some basic questions about that niche. For instance, what's the current state of affairs with laboratories of this type in your country? How financially successful is the average lab? How many labs are currently in operation? Other questions you should attempt to answer include how the average lab is getting their funding, and how the overall outlook for laboratories is shaping up.

1.1.1 Market Overview

As indicated above, you'll want to assess the overall market for laboratories in your country. You'll want to obtain data and statistics on market demands, market trends and market penetration, sources and availability of funding, burgeoning and bleeding-edge technologies, average labor costs, and geographic distribution. The resources you will use in your initial research will vary by country; but we recommend always using verified and trusted sources to assess the health of the market, rather than just relying on questionnaires or white papers with small search samples.

For example, the Diagnostic and Medical Laboratories industry in the United States has seen a growth rate of 1.1% year-over-year, with rising revenues, employment, and size (according to

IBIS). Of course, your laboratory may be a forensic lab or another type of lab operating outside of the medical field of study. Whatever the case, you will want to focus your overview on the specifics of your industry.

1.2 Granular Research

Now that you've researched the very basics of the industry, it's time to get into the finer details. In your granular research, you will want to answer the following questions: who is most likely to fund this type of research? Who are your direct competitors? Who might you best build networking relationships with? What's the condition of your competition and/or potential allies? What is the cost and availability of the type(s) of specimens that you plan on testing? Are such specimens readily available?

1.2.1 Competitor Research

When you first start researching your niche at the granular level, you're likely to run into some competitors (depending upon how novel your approach to research is). Even if you do see an abundance of competitors, this may not adversely affect the viability of your lab. The normal laws of supply and demand apply here – if demand is not completely supplied, there should be enough space for your lab to fulfill at least part of that demand. You should attempt to determine if that gap will be enough for success.

Here's what you want to ask yourself about your competition: What are they currently doing well? What could they improve upon? You might be able to accomplish this with a quick Google search, or it might take more in-depth research. If you need additional information, and you have the capital, you can invest in a market research team to perform in-depth competitor analysis. You can find these teams on directories like GreenBooks

Also, never forget the vast potential of minimizing your competition using lateral thinking: look for creative solutions to new or existing problems – solutions that the fewest number of people will have thought of. This should be part of a back-and-forth process that you will go through between *types of research* and *the competitors of each particular type of research.* The more active you are in going back and forth at this stage in the game, the more likely you are to stumble upon an idea which will minimize your competition.

1.2.2 Networking

Which physicians and clinics in your geography might need your services? Which suppliers can you connect with to foster necessary and/or useful relationships? Who offers the best specimen samples? What other labs can you connect with for collaboration and for improved output? Which labs or researchers are doing something relatively unique? Who has the best talent?

Some laboratories need to set up extensive networking capabilities to produce training and mentoring programs, to offer oversight, industry surveillance, and data management. These

processes are complex and will require specific steps dependent upon your laboratories niche and upon your community.

1.2.3 Testing Menu

For medical research labs, choosing the correct testing menu is a crucial part of lab setup. Your testing menu will determine not only what types of equipment and processes you will need, but it will also assist you in creating your lab's value proposition.

There are a few key points to remember when choosing your testing menu.

1. Avoid trying to incorporate too many tests into your plan (unless that's a necessary part of your specific research plan). While it may seem smart to test as many things as possible, testing largely relies on volume per test to remain profitable. Remember, equipment costs add up, as does the time per test.
2. Attempt to choose a testing menu that you are comfortable with. This will go a long way not only in keeping your lab productive, but also in keeping your staff happy and enthusiastic.
3. Research your testing menu. LabCorp provides a thorough review of testing types and methodologies.

1.2.4 Location

You will also need to plan out your location requirements. While this is an important part of your competitor research, you need to find the best location for your lab for other reasons as well, one of which is to successfully fulfill your spatial requirements. This includes thinking about square footage (more on that below), cooling and heating, plumbing, surface materials and electrical supply (some research requires higher power levels than what is normally supplied).

1.3 Business Plan

All your research — both broad and granular — should provide you with sufficient data for your next step – creating your business plan. A business plan is a roadmap that helps you and your team to understand your specific vision, and how you plan on bringing your vision to fruition. It's important to note that your business plan will also help you to capture funding, so it may be an essential part of your pitch.

According to the U.S. Small Business Association (SBA.gov), a business plan should include the following:

Executive Summary: This is a brief overview of what your lab is, what it will do, and why it will succeed.

Company Description: This is where you will outline what exactly your lab will specialize in, and what makes your lab stand out over the rest. . Is your location optimal? Do you service an

important need? Is the industry outlook fantastic? Remember to only note the positives in this section.

- **Market Analysis**: This is where you plug in all the competitive research from the granular research section.
- **Organization and Management**: Who is going to run your lab? How many employees will you have? What is your management type and what unique lab processes will you be using?
- **Marketing and Sales**: How will you effectively capture revenue (funding or non-funding) and how will you continue to produce results?
- **Funding Requests**: What level of funding do you require? Why do you need it? Explain everything the funding will cover and why it's a necessity.
- **Financial Projections**: For labs, this can be either finances or research results, depending upon your niche. How do you plan on producing something of substance?
- **Appendix**: This is where you will provide all of those resources you dug up during the various research phases.

2. Accreditation

Laboratories need accreditation so they can be be viewed as a trusted entity in the research community. . For labs, these accreditations will come in two forms — business and laboratory-specific.

2.1 Business Accreditation

Labs, like all businesses, need to file as a business with the state in which they operate. But, before you run off and start filling out forms, you need to figure out one critical detail about your new lab — what's your name?

The naming process isn't the easiest step. Maybe you already had a name in mind when you decided to start up your lab, or maybe you put this off until the last minute. Once you have an idea, you must make sure the name is available, using Google, as well as the Secretary of State's website for your geography. When you're sure the name is available you can move onto filling out the required forms for getting your business license.

Your city may also require business licensing. You will usually find this information on the website of your local city hall.

2.2 Lab Accreditation

Now you'll need to get laboratory-specific accreditations. This part is hyper-dependent upon your specific laboratory, your niche, and how deep down the accreditation hole you wish to go. The principle certifications for labs are the CLIA, COLA, CAP, and The Joint Commission. The primary accreditation is CLIA, which is administered and regulated on a state level. But, according to federal law, COLA, CAP, and The Joint Commission are also recognized accreditations (because they are "at least as strict as CLIA").

The accreditation you choose will depend on your circumstances. We recommend reaching out to a laboratory consultant to help you choose the best option for your needs.
Note: ISO certifications are often baked into these accreditations.

Important: There are plenty of unsavory online accreditations that are offered to laboratories. Don't purchase certifications outside of the ISO/IEC range until you are thoroughly familiar with the accreditation side of laboratory management.

**Additional accreditations may be required on the state level for specific types of labs.*

3. Supplies and Resources

Once you have your written business plan and your accreditations, you will need a building to house your lab, hardware, supplies and other resources. But you can't begin the process of fulfilling your building requirements without first ascertaining spatial and process flow requirements. Each process that your specimens go through must have a portion of space allocated to it. You will also require some storage space, both pre-process and post-process (the latter will usually be allocated for the storage of specimens which have gone through all processes), as well as comfortable working space(s) for your scientists/technicians, with associated computer workstations, restroom(s), breakroom, etc.

During this planning stage you will want to carefully consider process and specimen flow, each of which will affect equipment setup and may also affect spatial requirements. Process and specimen flow are typically the same, although some lab work may require a slight divergence from standard flow setups. The processes that occur with each specimen should be numbered 1-n (or whatever system is convenient for your setup), and the hardware and lab space associated with each process should be individually estimated.

Once this is completed, you can begin laying out the basic structure of your lab on paper (or using a computer visualization program), not only to ascertain your basic spatial requirements but also to attempt to maximize efficiency by minimizing space wherever possible/feasible.

Once this is done the next step involves either leasing a currently-available building space or procuring land and having a contractor build your structure to your specifications. There are an incredible number of nuances associated with the physical site itself, so for the purposes of this paper we're going to refrain from going into any greater detail (the actual physical plans for your laboratory should be discussed between yourself and your funding resources in detail).

When you're finally ready to start setting up your lab, finding the correct supplies can be a complicated process. You will need to reach out to multiple suppliers, research specific equipment sets, and find the appropriate software to power your digital needs.

Typically, labs will need the following:

- Upfit
- Personnel (lab technicians, scientific specialists)
- Equipment
- Materials
- Specimens
- Software (e.g., LIS, MIMS, etc.)
- Safety Tools

- Chemicals
- Testing Materials

During the process of equipment procurement, you will want to think about how your lab's digital components are going to be organized (e.g., mobile devices, computers, machines, etc.) as well as how they are going to be connected (e.g., networking, cabling, software, LIS, etc.)

You will also need to discuss the appropriate safety precautions with your team and look up the safety guidelines by state. Business Intelligence solutions can assist you with some of these processes. Remember, each state also has electronic record, waste disposal, safety guidelines and other requirements that must be strictly observed.

Your ISO and CLIA (or other) certifications will also require you to follow specific guidelines in equipment management and safety.

4. Preparing Your Back-End Processes

Finally, you will need to develop a robust set of business-related processes to ensure continued lab success. Remember, running a lab requires day-to-day procedures and systems to ensure proper billing, payments, payroll, and more.

4.1 Finances

We're sure that most laboratory administrators didn't found a lab because of their business acumen. But lab owners are not just scientists; they're business owners as well. Finances are a crucial part of operational success.

Your initial financial planning can be broken down into two categories — budget and payroll.

4.1.1 Budget

Creating a comprehensive budget isn't only necessary to keep operations running smoothly; it will also be a massive part of your funding success. Granting agencies need to know that you're both realistic (the number isn't too low) and lean (the number isn't too high.)

Finding balance in your budget can be tough. You will have to:

Calculate instrument investments

Include payroll (e.g., salary, benefits, etc.)

Calculate supplies per bench per scientist

list all other costs associated with starting (and running) your lab.

4.1.2 Payroll

Although payroll will be included in your budget, payroll should also be considered by itself as an important area of planning. Not only is payroll necessary due to the necessity of personnel, a good payroll plan is highly useful in ensuring that you're staying lean and efficient, and in determining what staff you can hire.

Remember, you will need additional support staff in addition to lab techs. This will include one or more of the following roles (depending on the size of your lab):

- Laboratory Director
- Clinical Consultant
- Technical Supervisor
- General Supervisor
- Laboratory Financial Manager
- Laboratory Consultant, etc.

*Note: CLIA **requires** that some laboratories (depending on the "complexity") have a Laboratory Director, Clinical Consultant, Technical Supervisor, General Supervisor, and testing scientists, although one person may fill multiple roles.*

As to how you process payroll, the specifics will depend upon your particular needs. Many labs outsource their payroll, while others purchase software-as-a-service or onsite solutions to help them streamline their internal payroll processing.

4.2 Marketing

Another crucial part of your lab's success will be your marketing. This includes contacting grant institutions, as well as to those who procure laboratory tests (clients). While your staff, equipment, and expertise is important for the sake of technical success, your marketing will be the driver of economic success. While labs often forgo the hiring of sales staff (which can be a workable strategy), marketing in general should be avoided.

There are many marketing avenues that can contribute to the success of your lab, including getting listed in key industry directories, the creation of a strong website (with Search Engine Optimization, or SEO), the use of direct mail and/or email marketing, a good customer service strategy (with the possibility of a dedicated customer service rep), social networking (including local), and more.

When you first start out, marketing will be a major growth pillar. The basics include registering yourself in the correct lab databanks and creating a website. But, as you grow, you will want to

connect with users on social media sites, send out emails, and incorporate dynamic marketing strategies. Labs require a constant stream of tests to remain profitable, so the more clients and/or research grants that you can capture, the more successful your lab will be.

4.3 Additional Processes

This is by no means an exhaustive study of the subject. There are thousands of other backend processes that your lab may want to adopt. Ancillary processes might include reporting, modification and adaptation of workflows, personnel recruitment, academic and industry intercourse, and legal services.

Running a lab requires a best-of-breed approach to process adoption. The use of all the available tools and processes, including cutting-edge technologies, will help your lab grow, scale, and succeed throughout its lifecycle.

The specific back-end processes that you need will depend upon your situation and your specific lab needs. Make sure that you engage your lab consultant to discover which services and tools will help to facilitate optimal success.

Final Thoughts

Building your own lab is can be a remarkable journey, and the payoffs can be incredible. It's also one of the few ways of putting yourself in the driver's seat of your own life, enabling you to achieve your own specific vision, and providing you with the day-to-day work scenario and lifestyle that you've likely been yearning for. We've only provided a general outline of the process, but this outline should help you get started on your own highly-rewarding path.

Enjoy your journey to lab ownership, and to the success and prosperity that could be well within your reach!