



## Syllabus

### Entrepreneurship for Life Science/Healthcare Startups:

#### Master Class Direct from Silicon Valley

September – December 2020

**Course Director:**

[Stephanie Marrus](#), MBA, MA, Managing Director, Entrepreneurship; Senior Lecturer, UCSF  
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**Teaching Assistant:**

[Jae-Young “Jerry” Jung](#), PhD, UCSF Postdoc, [Jaeyoung.jung@ucsf.edu](mailto:Jaeyoung.jung@ucsf.edu)

**Dates and Times:** September 30 – December 9.

Class lectures alternate between 9 AM and 5 PM Pacific Time (UTC -8:00 during standard time, UTC-7:00 during daylight saving time) to accommodate participants from different regions. The intent is that 50% of classes will be live during waking hours in a region ex US; in the US classes will be live. All classes will be recorded.

You can find your local time zone equivalent by region [here](#):

**Format:** Online, global. Lectures and Q&A. Peer forums based on geography and sector.

**Course Objective**

This course is about entrepreneurship -- starting new life science/healthcare (LS/HC) ventures that have the potential to scale to become significant enterprises. The class is appropriate for people with no formal business background, such as scientists and clinicians, as well as those with business training.

There are specific characteristics and challenges of a LS/HC venture because of the uniqueness of our industry. LS/HC products are categorized by sector, each of which has a different business model and dynamics: therapeutics, medical devices, diagnostics, and healthtech/digital health. We will touch on these in class and in sector specific forums.

You will learn how to assess a concept or product in the framework of a business opportunity. This includes assessing whether an idea has market appeal (product/market fit), figuring out a business model, determining the market potential and understanding the key elements of a successful venture. You will understand what is required to access capital and how to source investors who may invest in an early stage company. Through the Peer Forums, you will have access to a network of connections in the class and with Silicon Valley business mentors.

This course will provide knowledge about elements needed to create a high-potential, for profit science or medicine-based commercial enterprise. Our emphasis is on ventures that are scalable and can solve important healthcare problems. The knowledge will enable you to explore whether entrepreneurship is for you, start a company, join a startup team, innovate within a large company, refocus your business plan, understand the Silicon Valley mindset for investment or formulate government innovation programs.

### **Guest Speakers**

Lectures feature a guest speaker from Silicon Valley including CEOs, entrepreneurs, investors, attorneys and consultants who provide real world experiences. These top professionals in their fields provide invaluable perspectives on developing a viable venture. They will zero in on ways they have guided startups to success and guide you through fundamental questions that a new company must address. Drawing on the experience of Silicon Valley, students will be able to take actionable ideas away from the course and use them to build and improve their startups. You will be exposed to the Silicon Valley mindset and investor requirements to get funding.

### **Online Peer Forums**

We are offering a number of Peer Forums as part of class to give you the chance to interact with your classmates and our Silicon Valley mentors. The forums are optional, and offered in addition to the weekly class lectures. Mentors will join each Forum to be part of the discussion, answer questions and provide feedback. You will have a chance to discuss the material in the lectures, talk about your personal interest or any entrepreneurship topic. This is an opportunity to meet other class participants, find people with similar interests and benefit from the knowledge of our mentors.

We are planning two types of Forums based on initial expressions of interest: by geography and by life science/healthcare sector. There is no limit to the number of Forums you can participate in; you may choose a geographical forum plus a sector forum, or more than one of each category. You may only participate in the Forums if you are a class member.

Schedules for the Peer Forums, which begin after the second class on October 7, are as follows. The two types of Forums will alternate weeks.

Regional Forums: October 7, 21, November 4, 18, December 9

US/Asia: Wednesdays, 6:00 PM Pacific.

Europe: Thursdays, 10 AM Pacific

Sector Forums: Thursdays, October 15, 29, November 12, December 3

All at 9:00 AM Pacific, Thursdays.

## **Mentors**

Our mentors come from the Silicon Valley business ecosystem. They consult with, finance or have led startup ventures, lending their expertise in the Valley's "pay it forward" culture. Mentors will drop in on Peer Forums and be available to discuss the class content, questions relating to entrepreneurship or your specific project as time allows.

## **Time Commitment**

There is no required or suggested time commitment. You will get out of the class what you put into it. You can choose to attend all or some of the 10 one-hour weekly lectures, either live or via recorded sessions. You can participate in one or more Peer Forums, geographic and/or sector specific. The suggested readings provide helpful resources but are not required for course participation. The more effort you put in, the more you will learn.

## **Readings**

Course participants will receive a list of suggested readings for each topic, available on the internet. We will also recommend several books that serve as entrepreneurship texts or delve deeper into a specific topic/sector.

## **Communications**

We have established a Slack workplace for this course; the link to join this workspace will be emailed to all enrolled participants. Slack channels will be established for both geographic location and sector interest. This will be your means to find and connect with people who have similar interests.

## **Registration and Fees**

Registration is on Eventbrite: <https://www.eventbrite.com/e/entrepreneurship-for-life-scienceshealthcare-direct-from-silicon-valley-tickets-117448466525?aff=ebdssbonlinesearch>. Note that you are not registered until the fee is paid. **Fees are not refundable.**

- The fee is \$995 unless you preregistered before July 15, in which case you would have received a discount code.

- BIO and CLSI members have received a code if they are qualified for a discount.
- Sorry, there are no other discounts available.

## Class Schedule Overview

Class	Date/Time in US (Pacific)	Topics	Lecturers
1	Sept 30 5:00 PM	Opportunity Assessment & Customer Discovery	Errol Arkilic, PhD, CEO, M34 Capital; Founding Program Director, NSF I-Corps
2	October 7 9:00 AM	Business Models	Stephanie Marrus, MBA, MA , Managing Director, Entrepreneurship and Senior Lecturer, UCSF
		Starting a Company	Zachary Hill, PhD, CoFounder/CSO, Soteria Biotherapeutics
3	October 14 5:00 PM	Protecting Your Intellectual Property	Todd Esker, JD, MS, Partner, Morgan Lewis & Bockius
4	October 21 9:00 AM	Team Building	Teresa Toller, Head of People and Talent, Arsenal Bio
5	October 28 5:00 PM	Regulation, FDA Model	Geetha Rao, PhD, MS, CEO, Springborne Life Sciences
6	November 4 9:00 AM	Reimbursement; Selling to a Health Insurer	Beth Andersen, MBA, California Plan President, Anthem Blue Cross
7	November 11 5:00 PM	Angel Investing	Winnie Wan, PhD, MBA, Board Director, Life Science Angels
8	November 18 9:00 AM	Venture Capital	Lynne O'Keefe, MBA, Managing Partner, Define Ventures
			David Morris, MD, Operating Partner, Novartis Venture Fund
	November 25	<b>NO CLASS; US THANKSGIVING HOLIDAY</b>	
9	December 2 5:00 PM	Partnering with Pharmaceutical Companies	Sylvaine Cases, PhD, VP Oncology Scientific Innovation, Janssen/J&J
10	December 9 9:00 AM	An Entrepreneur's Advice: Lessons from the Trenches	Ryan Howard, Founder/ Chairman/CEO, 100Plus

## **Detailed Class by Class Information**

### **Class 1, September 30**

#### **How to tell if your idea can be a business: Customer discovery**

[Errol Arkilic](#), PhD, CEO, M34 Capital; Founding Program Director, NSF I-Corps

Assessing whether your idea is an opportunity. How do you know if anyone wants the product/service you plan to provide? Testing your value proposition. Getting unbiased customer feedback through interviewing potential customers. Interview technique, questions to ask. Market information expected by investors.

### **Class 2, October 7**

#### **Business models**

[Stephanie Marrus](#), MBA, MA

Definition of a business model, simple and complex. The Blank/Osterwalder Business Model Canvas. Business model options in different sectors: therapeutics, diagnostics, medical devices, digital health/healthtech. Prototyping to test the model you've chosen. Pivoting the business model with examples of famous pivots. Real life company examples.

#### **Starting a Company**

[Zachary Hill](#), PhD, Cofounder/CSO, Soteria Biotherapeutics.

Starting a company out of academe, going from PostDoc to Founder. Challenges of being a first time founder. The fundraising process, investor requirements. Building a team. The most difficult part of the startup process and the first year. What it's like to be an entrepreneur. The entrepreneurial personality. How to know if you've got the right mindset.

### **Class 3, October 14**

#### **Protecting Your Intellectual Property (IP)**

[Todd Esker](#), JD, MS, Partner, Morgan Lewis & Bockius

The importance of IP in LS/HC startups. How early you should think about IP. Implications of presenting in scientific meetings, poster sessions, publishing papers. IP strategy. Role of Provisional patents. Freedom to Operate. The US as a model for other countries. International filings and Rule of Law. Protecting different types of inventions by sector: therapeutics, diagnostics, software/digital health.

### **Class 4, October 21**

#### **Team Building**

[Teresa Toller](#), Consulting Head of People and Talent, Arsenal Bio

Finding a team to work with and the role of founders. How to divide equity among the founding team. Who should be on the initial team and when to add people. Striving for balance. How to create a shared vision, corporate culture. Hiring and recruiting. When and how to assemble a Board of Directors and an Advisory Board. Compensation. Leveraging advisors and consultants, when to hire and when to get contract help.

#### **Class 5, October 28**

##### **Regulation: the FDA Model**

[Geetha Rao](#), PhD, MS, CEO Springborne Life Sciences

The pathway for drug development: preclinical data FDA requires for entry into Man. Navigating the FDA. The phase 1 / 2 clinical pathway for therapeutics, medical device 510K vs. PMA. Digital health regulation, when FDA gets involved. Diagnostic regulation, CLIA Labs. Communication with the FDA for guidance.

#### **Class 6, November 4**

##### **Reimbursement; Selling to a Health Insurer**

[Beth Andersen](#), MBA, California Plan President, Anthem

Payers and providers defined. How payers think about new technology. Criteria for reimbursing and the process to be considered. How reimbursement by an insurer works. The importance of the patient, the physician, the hospital in the reimbursement decision. Formularies and their role. Outcomes based research and its use in making decisions. Comparative effectiveness as a metric. Value-based care vs. fee for service.

#### **Class 7, November 11**

##### **Angel Investors**

[Winnie Wan](#), PhD MBA, Board of Directors, Life Science Angels

What angel investors require and their process to invest. How angels are different than VC's. Angel groups versus individual angels. Stage at which angels invest. What angels look for in a company. Investment structure, convertible note vs. equity. Criteria for investing. Timeframe for exit. Characteristics of an ideal angel investment.

#### **Class 8, November 18**

##### **Venture Capital**

[Lynn Chou O'Keefe](#), MBA, Managing Partner Define Ventures and former Partner, Kleiner Perkins

[David Morris](#), MD, Operating Partner, Novartis Venture Fund

Perspectives from a new digital health fund and a corporate VC. How private venture capital works in Silicon Valley. Company stage at which VC's have interest. How venture portfolios are constructed, expectations for return. Where VC money comes from. Portfolio returns and timeframe. The most important attributes for investment. What a VC wants to hear in a pitch.

## **Class 9, December 2**

### **Partnering with Pharmaceutical Companies**

[Sylvaine Cases](#), PhD, VP Oncology Scientific Innovation, Janssen/J&J

The right time to approach a pharmaceutical company about partnering. How to find the right point of entry into the organization. The key influencers in the organization. The role of Pharma business development. What the Pharma partner needs from a deal. How Pharma assesses the asset internally. The process to decide to partner and how value is set. Typical deal structure. Pitfalls. When a partnership becomes a merger or acquisition opportunity.

## **Class 10, December 9**

### **A Serial Entrepreneur's Advice: Lessons from the Trenches**

[Ryan Howard](#), Chairman/CEO, 100Plus

Hear the important lessons this serial Founder/CEO has learned in navigating the investment world. Learn the mistakes that can change your company's trajectory. Discover the ways to protect yourself as a founder. Candid tips about structuring a company that an investor won't provide.

### **Course Director: Stephanie Marrus, MBA, MA**

**Biography:** Stephanie Marrus has defined her mission as facilitating the start of companies from UCSF science and technology, building the entrepreneurial ecosystem and providing the UCSF community exposure to the startup world. Since joining the University in 2012, she has developed a robust suite of programs that have contributed to a vibrant entrepreneurial community at UCSF and is recognized throughout Silicon Valley and beyond. In addition to heading the Entrepreneurship Center, she serves as Senior Lecturer/Course Director for UCSF's entrepreneurship classes.

She has translated her business experience to the classroom and teaches experiential courses in entrepreneurship in Silicon Valley and globally. She has been affiliated with programs at the University of California, Berkeley and Stanford University's Technology Ventures Program. She has taught and presented at conferences in Europe, Latin America, the Middle East, Africa and Asia.

During a 25-year plus business career, she has worked with over 1000 companies in science and technology as a member of the management team, business consultant or mentor. Many of these companies have their technological roots at UC Berkeley, Stanford, UCSF, MIT and Harvard. She has had roles as CEO, Chief Operating Officer and Chief Business Officer for public and private venture capital backed companies, led partnering and merger and acquisition transactions, headed corporate development, strategy, marketing, communications and investor relations. Her sector experience is in life science/healthcare and information technology.

She currently serves as a Small Business Innovation Research (SBIR) grant reviewer for the National Institutes of Health Center for Scientific Review.

Her academic titles have included Senior Lecturer at UCSF, Adjunct Professor at UC Berkeley's Center for Entrepreneurship in Technology, Entrepreneur-in-Residence at UC Berkeley's Haas School of



Business and Entrepreneur-in-Residence for the Global Entrepreneurial Marketing Course at Stanford. She is National Science Foundation (NSF) Certified National Faculty for Innovation Corps (I-Corps), NSF's highly successful entrepreneurial training. She led the creation of Lean LaunchPad for life science/healthcare taught at UCSF and adopted by National Institutes of Health (NIH) I-Corps. She has been a guest lecturer at Singularity University.

She is a frequent speaker and moderator at entrepreneurship conferences. She moderated panels at the White House's Global Entrepreneurship Summits in Hyderabad, India and Silicon Valley, spoke at the Global Entrepreneurship Congress in Bahrain, at the World Economic Forum's Center for the Fourth Industrial Revolution and participates in the State Department's International Speaker Program. She has spoken at industry conferences including the Biotechnology Innovation Organization's annual meeting and Singularity University's Exponential Medicine.

**Jae-Young "Jerry" Jung, PhD, Teaching Assistant**

Jerry is a UCSF Postdoctoral Scholar with a passion for entrepreneurship. Prior to coming to UCSF last year, he was Program Manager for an accelerator in the Institute for the Global Entrepreneur at the University of California San Diego (UCSD). When he isn't working on startups, he is a materials scientist, biomedical engineer, electron microscopy and biomedical imaging expert, housed in UCSF's Department of Orthopedic Surgery. He received his Masters in Engineering in Biomaterials from Dankook University, South Korea and his Doctorate at UCSD.