

THE

VENTURE CATALYST

ENGAGEMENT HANDBOOK





The Venture Catalyst Engagement Handbook

UC Davis Venture Catalyst enables the translation of University research into societal impact by supporting the formation and development of new ventures that can successfully commercialize University technologies. Each year, UC Davis research leads to new technologies and inventions that often form the foundational basis for startup companies.

In order to facilitate this process, the Office of Research established Venture Catalyst in mid-2013 to provide campus and University-associated innovators the resources and support needed to successfully form and grow entrepreneurial ventures. **This handbook illustrates some of the resources and support available to faculty, students, staff and alumni interested in developing technology-derived startups**, most of which will develop and are expected to grow within the Davis-Sacramento region and in proximity to the University.

I hope you will find this Engagement Handbook helpful as you explore the possibility of launching your own startup. We look forward to working closely with you to help achieve the full potential and impact of your innovative research.

Dushyant Pathak

Associate Vice Chancellor of Research &
Executive Director, Venture Catalyst

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Technology Commercialization at UC Davis

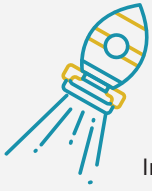
The Office of Research at UC Davis is responsible for delivering services that support and amplify University research, serving as an essential resource for advancing the research and economic impact mission of the University. Technology Management and Corporate Relations (TMCR), one of three divisions within Office of Research, is focused on transforming University research into commercial and economic impact, ensuring that science, engineering and nascent technologies will be the seed for successful products, services and regional economic development.

Since its inception in 2012, TMCR has represented and benefited from the close collaboration of three internal units:

(i) InnovationAccess works closely with campus researchers and inventors to steward intellectual property (IP) development and negotiate effective IP-enabled arrangements for the benefit of campus inventors and to advance the University's public mission.

(ii) The Office of Corporate Relations, which transitions on May 1, 2019 from the Office of Research into the University's Development and Alumni Relations (DEVAR) Office, facilitates and manages industry partnerships that leverage the University's research strengths, thereby seeding new technology development and enabling campus innovation; and

(iii) Venture Catalyst, provides campus-wide services, infrastructure and resources to assist researchers create well structured, effectively networked and efficiently resourced new ventures, so as to enable the translation of cutting edge technologies into commercial impact through technology de-risking, business incubation, entrepreneurial network development and capital formation.



Venture Catalyst

Venture Catalyst functions collaboratively across the University and works closely with the University's Mike and Renee Child Institute for Innovation and Entrepreneurship and with campus drivers of translational research, such as academic departments, research centers and institutes, and core research facilities, as well as with external stakeholders. Measured by the metric of new startups generated annually from UC Davis technologies, TMCR's programs have demonstrated success in bridging the translational gap that exists between University research and the commercial sector. Averaging four new startups per year in the ten years prior to the formation of Venture Catalyst, the unit has helped more than triple this number in the five years since its launch.

Services offered by Venture Catalyst include the STAIR™ (Science Translation and Innovative Research) Grant Program, a proof-of-concept grant and translational-research mentoring program, and the Smart Toolkit for Accelerated Research Translation (START™) Program, which provides a comprehensive suite of resources and services in support of University startups. The START Program provides participating UC Davis-associated innovators the tools they need to form startups that are better equipped to compete for

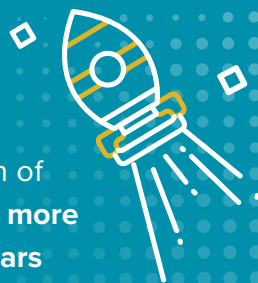


Measured by the metric of new startups generated annually from UC Davis technologies, **Venture Catalyst's programs have demonstrated success in bridging the translational gap that exists between university research and the commercial sector.**

commercialization resources. The Distributed Research Incubation and Venture Engine (DRIVE™) Network provides University-associated start-ups with affordable business incubation facilities including coordinated and consistent delivery of tenant services to support translational outcomes.

In furtherance of the University's educational, research and public mission, a key objective of Venture Catalyst and its programs is the support of practical educational opportunities for UC Davis students, faculty and researchers through translational science and innovative research undertaken in startups enabled by UC Davis research and technologies. Due to the inextricable linkage between UC Davis and the regional economy, the success of Venture Catalyst directly stimulates regional entrepreneurial activity and economic development, powered by technologies developed at UC Davis.

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Are You Ready to Launch a Startup?

Launching a new company can be a natural and rewarding progression of your research, especially if you are keen on seeing your ground-breaking research potentially have a direct impact in the lives of people. Establishing and sustaining an early stage company takes a significant investment of time and effort, so leveraging key UC Davis and community-based resources, as facilitated by Venture Catalyst, can efficiently support you in successfully navigating this challenging endeavor.

There are a number of factors you should consider in order to successfully make the leap from university research to startup company. To the right are just a few of the factors that you will need to carefully consider before making the decision to reimagine yourself as both a scientist, engineer or academic researcher, and an entrepreneur.



Do you really want to be directly involved with a startup?

Remember, there are no guarantees of success. Launching a successful startup based on your discoveries requires commitment, hard work, good timing and luck.

Can you clearly identify and describe the unmet need your business will address and do you understand what will be necessary to take the technology from where it stands today to the market?

Do you enjoy team-work and delegating important daily decisions to others, **or is control and direct involvement a key requirement for personal satisfaction?**

What is your desired role in the new startup?

Do you see yourself as an active member of the core business team or do you wish to participate as a consultant or advisor?

How much capital will you need and **how do you intend to raise these funds?**

Have you identified trusted and credible advisors, what experience do they bring and **how do you expect to build out the core business and technical team** that will be necessary for the success of your startup?



Venture Catalyst and its partners can help you with thinking through and answering these important questions.

How Do You Assess the Feasibility of Your Business?

Before you are ready to commit the significant time and effort needed to launch a successful startup, you should ask qualifying questions relating to whether your technology is ready for commercialization.

At what stage of development is the technology? Who owns the fundamental intellectual property (IP) and how strong is it? What is your plan for transferring the IP rights you will need to the company?

Venture Catalyst works closely with InnovationAccess to support the formation of new ventures focused on commercializing technologies developed at the University. In cases where the University inventor is interested in starting a company and entering into an IP agreement for technology developed by the inventor, Venture Catalyst and InnovationAccess can provide an opportunity to defer patent costs through the **Inventor Advantage™ Program (IAP)**. This deferment enhances the inventor's ability to develop inventor-generated IP and reduce near-term financial impact on the startup. IAP is part of the suite of tools and resources available through the START Program. Early in the process of discussing a potential IP agreement with InnovationAccess, inventors should reach out to the Venture Catalyst team to complete the START intake process to access both this program and other early services that might be beneficial to the startup, such as the **LegalNet program** offering startup incorporation services.

Does the technology have clear applications and a definable market or will it potentially disrupt an existing market?

After directly engaging with the Venture Catalyst team and its START Program, and participating in one of

the Institute for Innovation and Entrepreneurship's Entrepreneurship Academies, Venture Catalyst provides further market insights through its **Market Intelligence and Competitive Analysis (MICA™)** Reports. These provide basic competitive information including market size and segmentation analyses, competitive landscaping and other key elements that can be incorporated into pitch decks and proposals used for fund raising. MICA engagement is completed in close consultation with the startup team. After expressing interest in the program, the startup will be asked to complete a MICA questionnaire and will then meet with the Venture Catalyst team to discuss the approach to a possible report, if it is considered appropriate. Following this assessment, Venture Catalyst will perform the analysis and engage closely with the startup through an iterative process to develop the report.

Do you have the credibility that comes from one or more strategic corporate partners demonstrating interest in or financially supporting the research that is the basis for your technology development or translational research activities?

The Office of Corporate Relations team works closely to bring together faculty, campus sponsored programs, InnovationAccess and established companies, both large and small, to develop and manage productive research-engaged collaborations. These relationships can result in new IP and technologies but can also lay the groundwork for strategic partnerships with a startup that may be commercializing technologies supported by prior University IP. Early communication with corporate engagement staff, InnovationAccess and Venture Catalyst team members can help you access these enabling possibilities.

Will government grants be an important source of early capital and do you have access to resources that can support you in writing and submitting SBIR and related grant applications?

Venture Catalyst organizes **Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR)** grant workshops

and associated hands-on office hours to provide guidance and assistance to startups in developing well-written and competitive grant applications for these non-dilutive seed funding opportunities. Workshops are offered at least twice per year, aligned with major funding agency deadlines. Registration for these free workshops is open to University faculty, students, and staff as well as innovators in the community.

Do substantial proof-of-concept data exist in support of commercial feasibility? Is there a working prototype? What do you think are the most critical research and development milestones that you expect your company to achieve over the first three years post launch?

These milestones are important drivers of the value of your startup and can also — more importantly — be the decision drivers for whether it makes sense to launch a startup. In addition to engaging with the Venture Catalyst team and your contact within InnovationAccess, an important resource available to UC Davis faculty innovators is the **Science Translation and Innovative Research (STAIR) Grant program:**

The STAIR Grant program provides funding to projects led by University PIs to support translational science and innovative research, enabling demonstration of early proof-of-concept and commercial potential or feasibility, for technologies being developed with the intent of commercial translation. Applications are accepted annually through the research funding system administered by the Office of Research, are reviewed by a committee predominantly comprising industry experts, and are — under confidentiality — evaluated on technical merit, commercial potential, and program alignment.

Do you have an operating plan and pitch deck?

Assistance with developing a business plan and pitch deck is available through the Venture Catalyst START program and through engagement in the Institute for Innovation and Entrepreneurship's Entrepreneurship Academies.

Venture Catalyst offers multi-stage coaching and advising sessions to assist entrepreneurs in developing a strong pitch deck and effective messaging focused on attracting investment for their companies. These opportunities supplement the training provided by the Institute for Innovation and Entrepreneurship through its intensive Entrepreneurship Academies, focused on exploring the commercial potential of research and innovative ideas.

What are the growth objectives for the company? How will you acquire investors and how will they make a return on their investment? Is it your objective to grow the company rapidly so as to position it for an acquisition by a larger or more established operating business, or a possible initial public offering (IPO) on a public stock exchange?

Private investors rely on these exit strategies to get a return on their investment. Once again, early and effective engagement with the Venture Catalyst team and its START Program, and participating in the Entrepreneurship Academies are important first steps in beginning to frame your expectations. Additionally, Venture Catalyst's **MentorNet™ program** provides access to a network of experienced professionals and business leaders that are available to serve as mentors to help entrepreneurs address distinct business challenges and provide guidance on refining business plans, attracting investment and growing their companies. Mentor engagement is facilitated by Venture Catalyst based on startup requests for assistance as well as proactive connections enabled by team interactions with the startup. Once a specific need is identified, Venture Catalyst team members will engage with mentors in the MentorNet network to find the best fit and facilitate initial connections. While initial engagement may focus on addressing a specific need, many mentor relationships continue based on mutual interest by the company and the mentor.

Getting Started — InnovationAccess

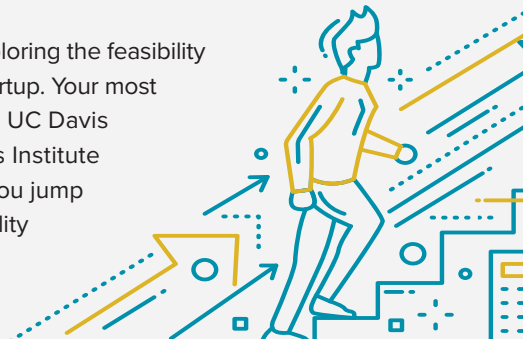
While there are a variety of resources available to you, both through Venture Catalyst and its partners, for startups derived from UC Davis research or supported by UC Davis technology, your first and most important resource is InnovationAccess and the IP Officer assigned to you.

InnovationAccess provides services that connect research to the commercial sector, and is focused specifically on protecting intellectual property and managing the licensing of the IP that supports University technologies. If you think you have invented technology that has the potential to make a commercial impact, you will need to protect this technology from others with more resources than you. The right time to record an invention with InnovationAccess is before you have published, publicly presented or otherwise disclosed the content or enabling details of the presumptive invention. InnovationAccess will answer any questions you may have, even before you file a **Record of Invention (ROI)** with the unit, so as to help develop a strategy for patenting and technology commercialization. After filing an ROI, you will receive acknowledgment from the InnovationAccess team within a week and you should expect an IP Officer to follow-up with you to discuss the invention and next steps.

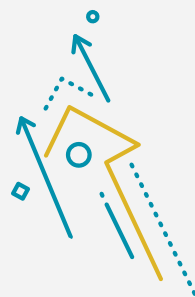
The **UC Patent Acknowledgment**, which is part of every University employee's employment agreement, requires the employee to promptly report and fully disclose to the appropriate UC licensing office, potentially patentable inventions. In addition, the employee acknowledges the obligation to assign to UC all rights to inventions and patents that are conceived or developed while employed by the University or developed in the direct course of work conducted as part of their employment or while using any University research facilities or any gift, grant, or contract research funds received through the University. Refer to Appendix A for additional information on patents and inventorship.

Next Steps — Venture Catalyst

You are now ready to take the next steps in exploring the feasibility of commercializing your research through a startup. Your most important campus resources at this stage are UC Davis Venture Catalyst and its partner, the UC Davis Institute for Innovation and Entrepreneurship. Before you jump feet first into investigating the practical feasibility



of your entrepreneurial aspirations however, it's important to consider the availability of robust translational data to make a well-educated decision with respect to commercial feasibility and commercially-directed next steps. The Venture Catalyst **STAIR Grant program**, launched in 2014, provides a unique set of resources to enable you to do just this.



The STAIR Grant program provides targeted funding and mentor engagement to support translational science and innovative research performed by campus researchers, with the goal of demonstrating commercial potential, proof-of-concept, or other outcomes that improve or clarify the commercialization risk profile for technologies being developed at UC Davis. The STAIR Grant program bridges the translational gap by funding research projects with strong commercial potential that are typically ineligible for traditional follow-on grant funding, but are still too early for private investment.

All STAIR Grant proposals are reviewed by a committee made up of industry experts representing corporate, investor and entrepreneurial expertise, Office of Research staff, and faculty knowledge experts qualified to evaluate a combination of commercialization-directed and technical merits of proposals received. Reviewers evaluate applications based on technical merit, commercial potential and fit with program objectives. All applicants are provided with written feedback based on the reviews, and all finalists and awardees are provided with one or more industry mentors from the review committee. Awardee project teams take part in facilitated sessions with mentors on a quarterly basis to review progress and guide project outcomes.



Your most important campus resources at this stage are **UC Davis Venture Catalyst and its partner, the UC Davis Institute for Innovation and Entrepreneurship.**

Following your engagement with the STAIR Grant program, or especially if your startup is not one that is reliant on technology, laboratory results, patentable or copyrightable IP, data licenses, or prototype or hardware development, you will benefit from engaging with the Institute for Innovation and Entrepreneurship's Entrepreneurship Academies.

The Institute offers general and thematically-oriented Academies, which are organized as three-day intensive business training workshops taught by investors, entrepreneurs, University faculty, TMCR staff, and industry experts, and are aimed at helping participants gain the knowledge and networks needed to assess and develop the commercial potential of their research and business ideas. The Academies are generally offered on campus three times per year including one with a general technology focus and two focused in specific industry domains. As a condition of funding, STAIR Grant awardees are required to attend one of the Entrepreneurship Academies with registration fees covered through Venture Catalyst support.

Everything Still Looks Good — Now What?

You should now have a lot of credible data and information at your disposal, and this is typically the best time to engage once again with Venture Catalyst this time through its START Program.

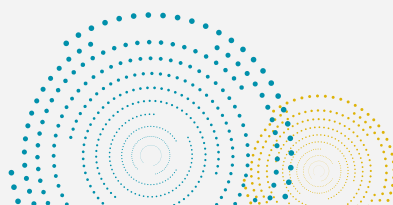
The START Program provides a comprehensive suite of resources, services and assistance to equip entrepreneurs with what they need to successfully form and grow robust companies. Innovators wishing to engage with the START Program are asked to complete an intake form to help the Venture Catalyst team best align its resources with specific technology and company needs as well as track participants' progress, network connections and any additional or missing requirements for success. Many of the programs are beneficial to engage with prior to company formation, such as IAP, LegalNet, and MentorNet. Others such as VentureNet, DRIVE, and SBIR/STTR grant workshops are best engaged with, soon after company formation.

In addition to the resources available through the START Program, Venture Catalyst **Economic Engagement and Community Outreach (EECO™) Systems** facilitate connections between startups and Northern California innovation and economic development resources to facilitate the successful integration of University startups into the regional economy through engagement with government agencies, startup and business support organizations, the investment community, service providers, and industry associations. For example, Venture Catalyst can facilitate connections for companies looking for commercial space after graduating from a DRIVE incubator facility, including engaging real estate brokers knowledgeable about R&D space in the area, local government economic development teams to help guide the permitting process, and regional economic development organizations to access business and real estate networks and other business incentive programs.

Through its network, Venture Catalyst also offers a variety of opportunities for networking, knowledge advancement, training and entrepreneurial engagement including via its Knowledge Exchange™ speaker series, where industry experts, successful entrepreneurs and faculty startup founders, investors, service providers, and others share valuable insights with campus innovators, faculty, students, staff and the regional entrepreneurial community.



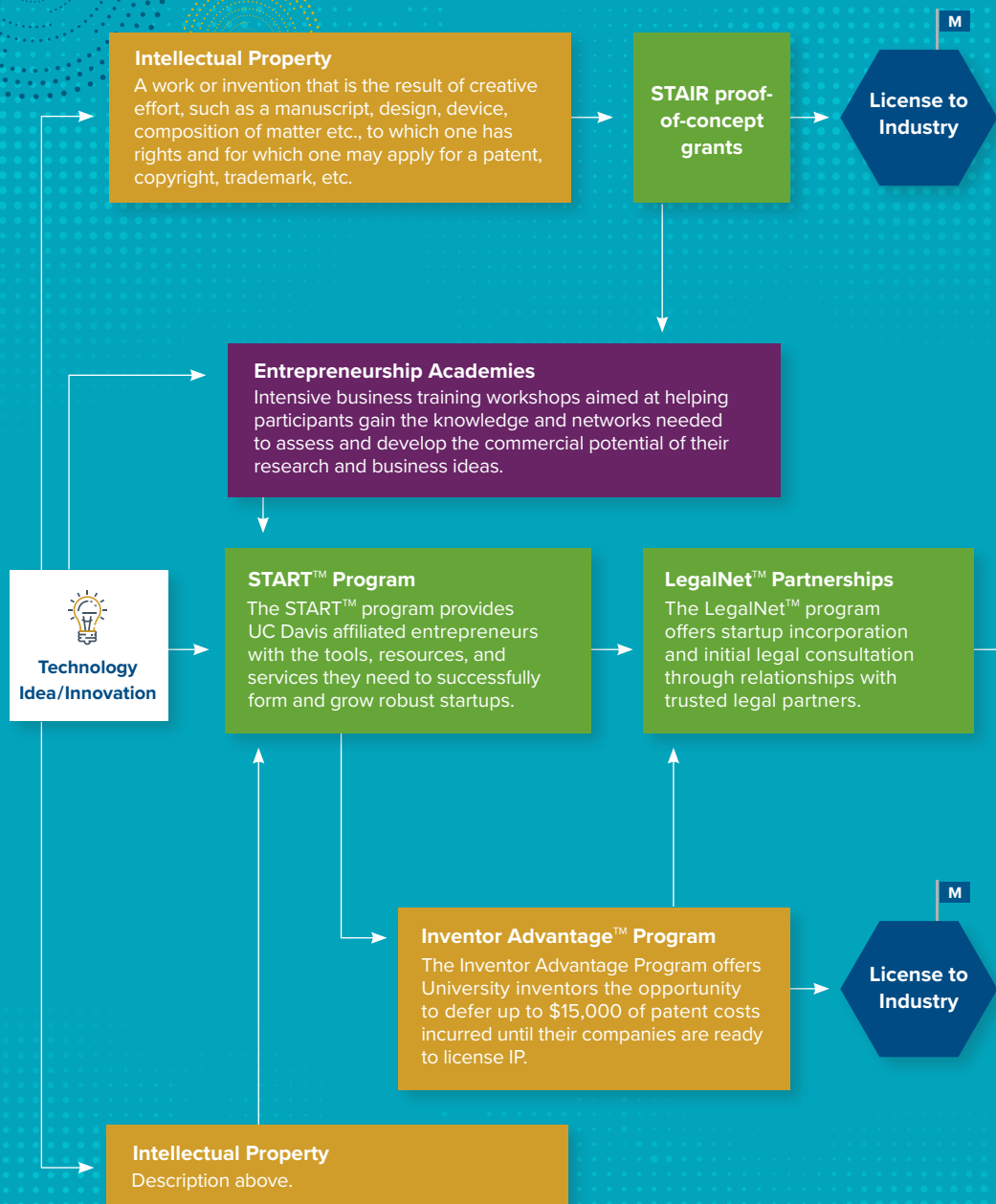
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Venture Catalyst Engagement Road Map

From Idea to Commercial Impact



Entrepreneurship Academies

Grant Workshops – Venture Catalyst organizes multi-session SBIR and STTR grant writing and submission workshops that take participants through all the steps necessary to successfully file a well-written grant application.

MICA™ Reports – The Market Intelligence and Competitive Analysis (MICA™) program offers basic market reports with information such as market size, market share, regional segmentation, and competitive landscape.

Pitch Coaching – Venture Catalyst offers multi-stage coaching and advising sessions to assist entrepreneurs in developing a strong pitch deck and effective messaging.

MentorNet™ Advisors – The MentorNet™ program provides access to a network of experienced professionals and business leaders that are available to act as mentors to help entrepreneurs address distinct business challenges.

Business Plan and Funding

Form
Company

Build
Company

Personnel, Services, Space, and Equipment





VentureNet™ Program – The VentureNet™ program connects entrepreneurs with providers of startup business and technical services at preferred rates.

TAP™ Programs – The Talent Acquisition Partnership (TAP™) Program offers access to participate in the Internship and Career Fairs at a discounted registration rate.

DRIVE™ Network – The Distributed Research and Incubation and Venture Engine (DRIVE™) program provides startups with access to a network of lean, thematically oriented business incubators with affordable, mixed office/lab spaces and integrated research and development equipment and instrumentation.

DARTS™ Program – The Discounted Access to Research and Translational Services (DARTS™) program offers access to research and development services and state-of-the-art technology and equipment at partner Camp Core Facilities utilizing a discounted fee structure.

Key

-  Institute for Innovation and Entrepreneurship Offerings
-  InnovationAccess Offerings
-  Venture Catalyst Offerings
-  Milestones

Capital Formation

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EECO™ Systems—The Economic Engagement and Community Outreach (EECO™) systems program facilitates connections between startups and the Northern California innovation and economic development ecosystems.

Investor Introductions

BIG Accelerator Program—The Biotech Innovation Gallery (BIG) Accelerator Program supports select biotech startups by providing customized mentoring engagements, business model and investor pitch coaching, assistance with developing marketing collateral, and facilitated industry connections.

Big Bang! Business Competition—Bang Bang! provides an opportunity for entrepreneur to compete for prize money and participate in a series of business training workshops.



Intellectual Property Agreement Types

Several different forms of agreement are either necessary or available in the course of exploring the formation of a startup company based on UC Davis technologies and associated intellectual property.



Confidential Disclosure Agreement (CDA)

A CDA is a simple agreement through which the recipient of confidential information agrees not to disclose such information to any third party and agrees to only use such confidential information for the stated purpose for which it was conveyed. The disclosure of potentially patentable subject matter in the absence of a CDA renders such subject matter unpatentable.



Letter Agreement

A letter agreement is a simple agreement—in letter-format—between the University and the startup. Through this agreement, the University agrees, for a modest fee, that during the term of the agreement, it will not convey rights to the subject technology to a third party. The term of this agreement is generally short and may only be extended a limited number of times. Its purpose is to give the startup a relatively inexpensive way to have some time to assess the commercial potential of the invention prior to entering into an Option or a License agreement with the University. Letter Agreements do not grant the company any rights to practice the IP.



Option Agreement

An option agreement is one through which the University grants a startup an exclusive option, during the option period, to negotiate an exclusive license to commercialize University technology. During the option period, the company is also granted an exclusive right to use the technology and practice



the IP for research (but not commercial) purposes. The standard terms for an option agreement include an option fee and reimbursement of past and ongoing patent costs incurred by the University. An option agreement is a good choice if the company wants to commence further technology development, but is still refining the precise business model and other financial details prior to negotiating the license agreement necessary to undertake commercialization activities.



License Agreement

A license agreement grants the start-up company all the rights necessary to research, make, have made on its behalf by others, use and sell commercial products covered by the IP. Its term is typically the life of the patent (although it can be terminated by the company at any time, upon notice, and by the University for material breach of its terms by the company). The business and financial terms of a license agreement vary widely, as each agreement is highly specific to the nature of the anticipated products (or services) and market, the development stage of the company, and the nature and development stage of the technology being licensed, including the extent of commercial enablement being conveyed by the University to the company. UC follows market benchmarks when developing financial and business terms and has access to “comparables” from hundreds of licenses within the UC system and across the U.S. and Canada, through its partnership with Osage University Partners.



License agreements include several common provisions that are important to understand.

Some examples are provided below.

- **License Fees**

A central tenet governing the conveyance of University owned rights to a private entity, is the requirement to receive fair consideration from the commercial entity in return for the grant of such rights. Fair consideration typically involves the optimization of upfront license grant fees, milestone payments, royalties, equity ownership and other financial consideration. In general, technology startups face a combination of high early-development costs and technology risk. As a result, early investors are generally reluctant to pay the full extent of market-rate licensing fees, since this is cash that cannot be applied towards de-risking and advancing the technology. Both in recognition of this, and as a way to retain upside for the University from the future success of the company, the University typically takes equity in a startup as partial payment of licensing fees. Equity is typically taken as common stock with a limited ability for the University to prevent dilution of its stake through subsequent financing rounds in the company.

- **Earned Royalties**

Royalty rates depend on a variety of factors including the value of the invention, the cost of commercializing the technology, profit margins, the level of enablement of a future product by the University including the need for other licenses for commercialization, and whether the license is exclusive or nonexclusive. Royalties are typically a percentage of the company's revenues from sales of the product or service, after netting certain costs.

- **Diligence Obligations**

The University licenses patent rights to startups with the expectation that the startup will make diligent and good faith efforts to commercialize the licensed technologies for societal benefit, in accordance with the University's public mission, and in the case of Federally funded inventions,

to comply with Federal law. Accordingly, technology development milestones and an associated timeline are developed in consultation with the licensee, and included in the license agreement. Additionally, the University may include annual maintenance fees, milestone payments and minimum annual royalties, as additional incentives for the company to develop products or deliver services under the licensed IP, and to diligently undertake commercialization of such products or services.

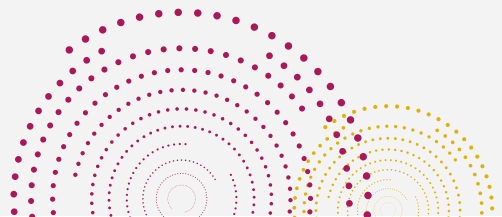
- **Patent Cost Reimbursement**

Licensees are required to reimburse the University for all the costs incurred by the University in securing the licensed patent rights.

The Inventor Advantage Program, offered by InnovationAccess in consultation with Venture Catalyst, is provided to eligible University inventors, who found startups based on their inventions, and defers up to \$15,000 of accrued patent expenses, until the company is ready to negotiate a license agreement. This enhances the inventor's ability to develop and de-risk the technology, and apply for SBIR and other grant funding available only to companies, while not impairing the startup's near-term financial footing.

- **Sublicensing Revenue**

If the licensee authorizes others to use the licensed patents to develop products or services by granting a "sublicense," the University requires the sublicensee to pay royalties and other financial consideration to the University, at the same rate as the licensee would, on products or services sold that are covered by the sub-licensed patents. If the licensee receives any other fees or payments in exchange for the sublicense of University patent rights, the University typically receives a negotiated share of such revenue.



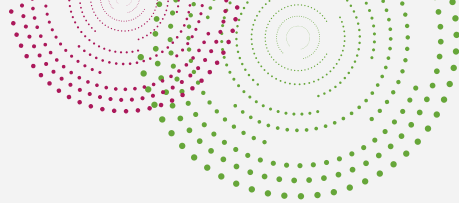


Ownership of IP

The University maintains ownership of all IP licensed to the startup, and manages it in the public interest and for the benefit of the licensee. For IP developed with Federal funding, the University is prohibited from assigning ownership to a third party without the formal written approval of the funding agency, which has the right to elect to take title and manage such IP itself.

Irrespective of the source of funding, maintaining ownership allows the University to comply with its core principle of ensuring that academic and other non-profit researchers are free to practice the IP as needed to conduct non-commercial research and advance knowledge, while granting the startup all rights necessary to commercialize the technology and maintain a competitive advantage.





Patent Prosecution

The University retains the right to manage all elements of the prosecution of licensed IP. The University shares with the licensee, correspondence between its patent attorneys and the patent office, with sufficient time for review and input, but retains the final say on any decisions. This approach ensures that the patent is prosecuted in a way that protects the University's (and thus the public's) interest in the invention at all times, including in the event the licensee terminates its license to the underlying technology at a future date. Refer to Appendix A for additional information on patents.

Pre-Existing Licensing Obligations

UC Davis research is funded by a wide range of sources, many of which obligate the University with respect to what it can do with IP generated by such funded research. The most common source of research funding is the Federal government, which requires the University to manage Federally funded intellectual property in accordance with certain rules. For example, these rules require the University to (i) grant the Federal government a paid-up, non-exclusive license for its own use; (ii) make diligent efforts to develop and commercialize the invention (iii) give a preference to small businesses while addressing the fair market value of the invention; (iv) perform “substantial U.S. manufacture” of products sold in the U.S., if these are enabled by an exclusive license; and (v) to distribute a portion of net revenues to inventors and use the remainder of the income to support research and education. (At UC, for inventors employed with the University after 1997, 35% of all licensing revenues flow to inventors — Appendix A provides additional information on inventorship). If the funding agreement under which the intellectual property is developed, includes licensing obligations to the sponsor, the University is legally bound to pass those obligations through, in its licenses. State, corporate and foundation sponsors of research may also have pre-existing licensing obligations, so it is important for potential licensees to confer with InnovationAccess (which in turn may need to confer with the University's Sponsored Programs staff) to understand what these requirements might be.



Funding Sources

When starting a company, generating funding to support the business is perhaps the single most challenging task at hand. Before embarking on this journey, it is necessary to determine how much funding is required and from where it will come. Below are some factors to consider in determining how much funding is necessary:

- Employee Salaries & Benefits
- Space & Facilities Leasing
- Equipment & Specialized Instrumentation
- Travel & Related Business Expenses
- Legal Fees
- Contract Services
- Time to Market (How long before initial sales or acquiring a strategic corporate partner or other source of future capital?)
- Cost of licensing foundational technology from university and IP-related expenses

Commercializing technology with software companies being a frequent exception, is a substantially capital-intensive activity. Entrepreneurs need to effectively present their opportunities to individuals and institutions with the capital to help them build their companies and advance their technologies towards the market. Leveraging the UC Davis Venture Catalyst network is one way to start the networking process that can help get the attention of angel and venture capital investors.

Funding for the company may come from one or more sources, including grants, strategic partnerships, investors and sales. One can grow the business slowly and organically based on grants or sales without the need to raise external funds but this is typically not the case for technology intensive businesses and this, combined with the fact that University technologies are typically at a very early stage of development, results in most University startups requiring substantial investment capital to advance them from University spinoff to the market.

The most common forms of technology start-up funding are angel investing and venture capital. In the very early stages of startups, entrepreneurs use their own funds and those obtained from friends and family. However, technology commercialization typically requires multiple rounds of funding from multiple sources.

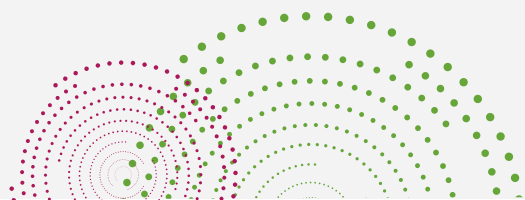


When starting a company, **generating funding** to support the business is perhaps **the single most challenging task at hand.**

Angels and venture capitalists (VCs) are private investors who take on high-risk ventures with the objective of obtaining high returns on their invested capital. Return requirements vary based on industry sector and stage of funding, but many investors can expect as much as 10x their initial investment over five years.

Angel Investing

Angel investors are typically high-net-worth individuals who have a personal interest in funding new companies. In exchange for equity, they are often willing to invest at earlier stages and with smaller amounts of money than VCs. They can take passive or active roles in the startup and typically have a longer investment horizon than VCs do. According to three-year investment data from PitchBook, the average amount of funding raised during an angel/seed round is about \$750,000.





Venture Capital

Compared to angels, venture capitalists can invest larger amounts of money (usually millions of dollars) in a company. In exchange, they tend to receive more equity and preferred rights compared to other shareholders, including the founders. VCs also exercise control and connect experienced management advisors to the company to help guide and grow it. They typically will invest in several rounds of funding and are part of a larger syndicate of investors in the company. According to three-year investment data from PitchBook, the average amount of funding raised during a Series A venture capital round is about \$8 million and the average raised from a Series B round is roughly \$15 million.

Venture Catalyst offers multi-stage coaching and advising sessions to assist entrepreneurs in developing a strong pitch deck and effective messaging focused on attracting investment for their companies. The process includes interactive sessions with the Venture Catalyst team and InnovationAccess, and feedback and advising sessions with investors and business leaders through the Angels-on-Campus program. These sessions often involve mentors from the MentorNet program to provide feedback and engagement with teams to address specific concerns.





Venture Catalyst offers multi-stage coaching and advising sessions to assist entrepreneurs in developing a strong pitch deck and effective messaging focused on attracting investment for their companies.

Government Grants: Small Business Innovation Research (SBIR) or Small Business Technology Transfer (STTR)

The U.S. government provides innovation research grants to small companies (companies with fewer than 500 employees), which can be great sources of initial capital. Some of the benefits of financing through these government grants are that the funds are non-dilutive since they do not involve an equity stake in the company, and IP ownership is retained by the company. The SBIR/STTR Program, also known as “America’s Seed Fund,” provides nearly \$3 billion in competitive grant funding each year to support small advanced technology firms to spur new technological discoveries and facilitate the commercialization of innovations. These grants are awarded in a three-phase process: Phase I focuses on proof-of-concept feasibility studies and prototypes with funding of approximately \$150,000 for 6–12 months; Phase II emphasizes full research and development with awards of roughly \$1 million over a 24-month period; Phase III is structured around commercialization attracting other forms of funding. Used effectively and strategically, these grants can enable significant commercialization proof-of-concept to generate enterprise value for your venture prior to raising capital from investors.

Venture Catalyst organizes SBIR and STTR grant writing and submission workshops and associated hands-on, agency-specific office hours that take participants through all the steps necessary to successfully file a well-written grant application with specific focus on aspects such as crafting a well-structured research and commercialization plan, developing a realistic budget, engaging with program officers, anticipating reviewer comments, and completing necessary registrations and paperwork. These workshops also address University compliance and intellectual property agreement processes. Venture Catalyst can also work with applicants on a supplemental letter of support from the Associate Vice Chancellor of Research, outlining resources available to the company and the status of the associated intellectual property. Working closely with Venture Catalyst is a good way to ensure a strong letter of support for the company’s grant application.



Divvying Up Equity in Your Startup

When starting a company, the co-founders should agree in advance about how to split the equity. A conversation of this nature is best had early in the process, and an agreement should best be memorialized in writing. Questions to ask include the following. Is the contribution of each founder equal? Is the risk the same for each founder? For example, is one founder leaving a job to work full-time and unpaid at the company, while another is continuing in their current job until the startup is able to raise money?

It is also important to consider vesting, whereby each founder's total equity in the company only becomes available over time if they stay employed with and meaningfully contributing to the company. This is to address situations for example, where if all the founders were to get all of their equity on day one, and six months later one founder were to leave while other founders continued to work for several more years, the equity would not be fairly distributed. Reverse vesting allows a founder to receive all of their stock immediately, but subject to a right of repurchase by the company. The repurchase right expires over time for the duration the founder stays with the company. It is important to discuss these considerations with the company's legal counsel early and ideally at or before the time of company formation.

Consider if equity can and should be used to pay for outside services. Legal counsel, business, and financial professionals, advisors and consultants may be willing to take equity in lieu of cash or as partial consideration for deferring payment or fees. This type of payment can be very useful before substantial capital has been raised, but take note that it can be difficult to establish a fair amount of equity in exchange for such services.

Initial Founder Split

Example Initial Cap Table

Lead Founder/CEO

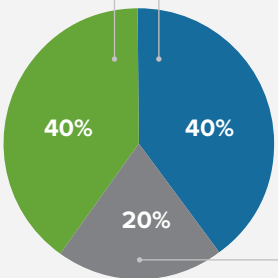
- Initial CEOs/Lead Founders typically get the largest chunk of ownership
- These Founders are full-time
- Initial Equity ranges from 30–60% of the company

Co-Founders/Employees

- Co-Founders and key employees includes founding scientists, C-level execs, VP, and any initial employee
- Investors will typically like to see an initial team in place before investing in a company

Option Pool

- Initial option pool is to incentivize new hires with awards (Day 1 + ~annually)
- A company typically refreshes their option pool at every financing round and targets 15–25%



Source: Osage University Partners
Proprietary Information

Typical Pre-Financing Equity

| Position | Range % |
|--------------------------------|------------|
| Founding CEO | 30–60% |
| Active Founding Scientist | 20–40% |
| Passive Founding Scientist | 1–5% |
| University Founding Equity | 2–20% |
| Professional CEO (Series ~A/B) | 5–10% |
| C-Level | 2–5% |
| Lead Engineer/Scientist | 1–2% |
| Engineer (5+ years) | 0.66–1.25% |
| Engineer (Junior) | 0.2–0.66% |
| Ind. Board Member/Advisor | 1% |

Active Founding Scientist

- Titles range from CTOs, CEOs, and Chief Scientist
- Many are part time, but spend at least 30% of time at startup
- Get 20% median and 25% mean initial equity
- The most highly compensated are founding scientist CEOs, which is rare
- Active founding scientist are more typical in tech companies

Passive Founding Scientist

- Titles range from nothing, Advisor, Scientific Advisory Board to Chief Scientist
- Spending very little time at startup and some are not in touch with their companies at all
- Get less than 5% initial equity

Source: Osage University Partners
Proprietary Information

Dilution Overview

Founders of startups are often concerned about dilution of their initial ownership in the company. Maintaining the potential for significant wealth formation through their equity stake in the company if it achieves a successful “exit” is important motivation for entrepreneurs. That said, it is helpful to understand the realities of how dilution works. Founders’ dilution is the reduction of the founders’ percentage ownership stake in the company (as measured by the percentage of total shares that the founders own). Dilution is primarily caused by the issuance of shares to new investors. When the number of shares outstanding increases, each existing stockholder owns a smaller, or diluted percentage of the company.

It should be clear that were there to be no increase in the value of the company prior to each issuance of new shares, the value of each share would decrease with each such share issuance. This is why it is so important to develop a detailed business plan that clearly and credibly identifies value increasing milestones (both technical and business) that will be achieved through deploying the capital raised in each financing round. It is also important to project the multiple by which you anticipate the company’s value to increase if the identified milestones are achieved.

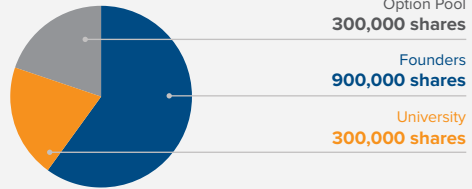
The following infographic is based on a simplified model (for pedagogical ease) provided by Osage University Partners. Numbers are chosen for ease of calculation and it presumes that the only source of dilution is additional share issuance related to serial capital investment by investors. Its purpose is to demonstrate the relationship between dilution of ownership and increase in value of the company, when each round of capital invested in the company enables development milestones that substantially increase the company’s value. It should be evident that a well-developed capital formation and value enhancement strategy results in a substantial increase in the overall value of the founders’ shareholding even though the percentage of the founders’ ownership in the company decreases substantially in the process.

In this example, at startup the founders own 60% of the company which is worth (notionally, since the stock is illiquid at this stage) \$900,000. After four rounds of financing, they own only 7% of the company, but this substantially smaller stake is now worth \$5,625,000! The company is subsequently acquired for \$200 million (the “exit” or liquidity event), at which point the founders’ 7% share of the company is worth \$14 million! Hopefully this helps explain why having a small piece of a very large pie is better than having all or a substantial piece of a very small pie. (Please note that the increasing size of the pie charts is not depicted to relative scale due to page space restrictions.)

AT STARTUP FOUNDING

Founders: 900,000 shares
University: 300,000 shares
Option Pool: 300,000 shares

Total Shares: 1,500,000 = 100%
Price/Share = \$1
Capital Raised = \$0
Startup Value = \$1,500,000



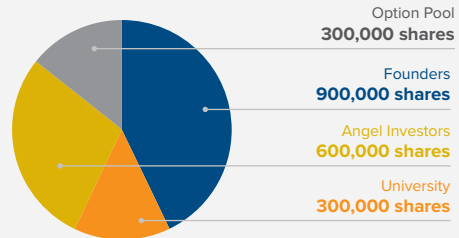
At the founding stage, there are a total of 1,500,000 shares (\$1 per share) divided among the founders, the University, and an option pool. So far there is \$0 in capital raised.

Founders' Shares Notional Value = \$900,000

SEED ROUND

Angel Investors: 600,000 shares

Total Shares: 2,100,000 = 100%
Price/Share = \$1.25
Valuation Increase = 25% (1.25 multiple)
Capital Raised = \$750,000
Pre Money Valuation = \$1,875,000
Post Money Valuation = \$2,625,000



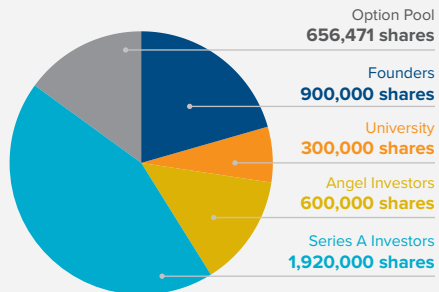
At the seed round, a new group of investors are introduced, called the Angel Investors. There are 600,000 shares among the Angel Investors, at \$1.25 a share. With the new investors, a total of \$750,000 in capital has been raised.

Founders' Shares Notional Value = \$1,125,000

SERIES A

Series A Investors: 1,920,000 shares
Option Pool: Increased 356,471 shares

Total Shares: 4,376,471 = 100%
Price/Share = \$1.56
Valuation Increase = 25% (1.25 multiple)
Capital Raised = \$3,000,000
Pre Money Valuation = \$3,726,838
Post Money Valuation = \$6,726,838



At this stage, another group of investors enters — Series A Investors. This group owns 1,920,000 shares. The option pool group has also increased. Now, the price per share is \$1.56 and \$3,000,000 in capital was raised.

Founders' Shares Notional Value = \$1,404,000

SERIES B

Series A Investors:

Additional 2,105,806 shares

Series B Investors: 2,694,194 shares

Option Pool: Increased 290,196 shares

Total Shares: 9,466,667 = 100%

Price/Share = \$3.13

Valuation Increase = 100%

(2X multiple)

Capital Raised = \$15,000,000

Pre Money Valuation = \$14,034,069

Post Money Valuation = \$29,034,068

Option Pool
946,667 shares

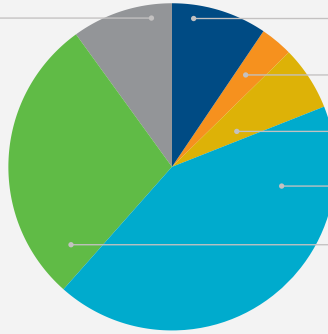
Founders
900,000 shares

University
300,000 shares

Angel Investors
600,000 shares

Series A Investors
4,025,806 shares

Series B Investors
2,694,194 shares



Another group, the Series B Investors, comes in with 2,694,194 shares, while the Series A Investors add an additional 2,105,806 shares and the option pool increases by 290,196 shares. The price per share grows to \$3.13 per share and \$15,000,000 in capital is raised.

Founders' Shares Notional Value = \$2,817,000

Founders
900,000 shares

University
300,000 shares

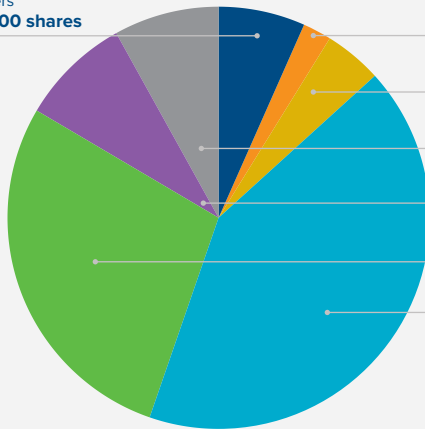
Angel Investors
600,000 shares

Option Pool
1,088,696 shares

Series C Investors
1,160,563 shares

Series B Investors
3,832,586 shares

Series A Investors
5,726,851 shares



SERIES C

Series A Investors: Additional 1,701,045 shares

Series B Investors: Additional 1,138,392 shares

Series C Investors: 1,160,563 shares

Option Pool: Increased 142,029 shares

Total Shares: 13,608,696 = 100%

Price/Share = \$6.25

Valuation Increase = 100% (2X multiple)

Capital Raised = \$25,000,000

Pre Money Valuation = \$58,352,195

Post Money Valuation = \$83,352,195

A last group, the Series C Investors, is added with a total of 1,160,563 shares. The Series A Investors increase their total number of shares by 1,701,045 shares, Series B increases their total number of shares by 1,138,392 shares and the option pool adds an additional 142,029 shares. The price per share increases to \$6.25 per share (2X what it was worth previously).

Founders' Shares Notional Value = \$5,625,000

ACQUISITION OF COMPANY FOR \$200,000,000

Founders: 7% of \$200M = \$14 Million

University: 2% of \$200M = \$4 Million

Angels: 4% of \$200M = \$8 Million

Series A Investors: 42% of \$200M = \$84 Million

Series B Investors: 28% of \$200M = \$56 Million

Series C Investors: 9% of \$200M = \$18 Million

Option Pool: 8% of \$200M = \$16 Million

Angels: ~11 X return on investment

Series A: ~4 X return on investment

Series B: ~4 X return on investment

Series C: ~2 X return on investment



Company Worth =
\$200,000,000

In this example, at startup the founders own 60% of the company, which share is worth (notionally) \$900,000. After four rounds of financing, they own 7% of the company, which share is worth \$5,625,000. The company is subsequently acquired for \$200 million (the exit or liquidity event), at which point the founders' 7% share of the company is worth \$14,000,000, which in the event of the acquiring company being publicly traded, is equivalent to real cash as opposed to notional value.

Founders' Shares REAL Value = **\$14,000,000**



It should be evident that a **well-developed capital formation and value enhancement strategy results in a substantial increase in the overall value of the founders' shareholding** even though the percentage of the founders' ownership in the company decreases substantially in the process.

This is why it's so important to develop a detailed business plan that clearly projects the value increasing milestones (technical and business) that will be achieved with the capital raised in each financing round.



Building Your Company

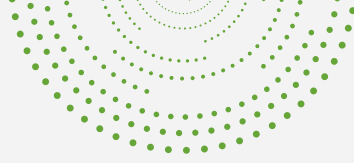
Legal Representation: There can be personal tax implications for founders, depending on how equity is granted and

so it is vital that founders get legal advice

on these tax implications before incorporating the company and issuing shares. Choose legal counsel that has experience working with start-up companies. The University and its employees are not in a position to provide legal advice to University employees in their capacity as startup founders, or to private entities. Seeking legal counsel is important in making the various decisions related to starting and building a company. An attorney with experience in business entity formation and equity considerations can be a reliable and trusted advisor.

The Venture Catalyst LegalNet™ program offers startup incorporation and limited initial legal consultation through relationships with experienced law firms that provide the following services at no-cost, except for associated filing fees and any out-of-pocket expenses. Standard services include selection of the appropriate form of business structure, assistance with setting up the initial pre-funding capitalization table, registration with appropriate authorities, standard forms of simple legal agreements, and in some cases a preliminary review of the University license agreement. It is important to note that the services provided through LegalNet to University-associated startups are free (except for out-of-pocket expenses), and so are necessarily limited. It is expected that if significant legal advice or services beyond those offered through the LegalNet program are required by the company, that the company will formally retain the law firm. Many LegalNet partners offer deferred billing for legal services beyond those provided under the LegalNet program, as part of their retention agreements. In return for these *pro bono* services there is an informal expectation that the startup will retain the services of the LegalNet partner when it is in a financial position to do so.





Board of Directors: Establish a Board of Directors early in the launch process and prior to raising capital. The early Board may consist of company co-founders though it is advisable to have an also independent board member if you can. The post-funding board of directors will likely include one individual from the company's founding team, one or more investor representatives, and one or more independent industry experts.

Management and Early Team: Consider each founder's role in the management team. Other team members may be needed with strong domain expertise, business experience and market knowledge. Investors are impressed by companies with experienced teams in place, and are unlikely to fund even the best ideas if there are significant gaps in the team. Keep in mind that it is not uncommon for investors to require changes to the founding team members' roles with the company, before they will commit to making an investment.

The Venture Catalyst Talent Acquisition Partnership (TAP™) Program is a collaboration between UC Davis Venture Catalyst and the Internship and Career Center (ICC), that offers startups participating in the Venture Catalyst START program the ability to participate in the ICC Job Fairs as an employer for a discounted registration fee in order to incentivize the recruitment of talented students and alumni for internships and employment opportunities with the startups.

Accelerators and Incubators: Start-up accelerators and incubators are an increasingly important element of the entrepreneurial ecosystem, with some of the biggest being in the life sciences sector. The reason is simple: establishing a laboratory with state-of-the-art equipment is extremely expensive, and for startups with small teams, this expensive and specialized instrumentation, though essential, may be used infrequently. Why not share resources? Beyond shared equipment, most incubators seek to offer a comprehensive start-up package. They provide resources and guidance, with the goal of aiding companies in the initial stages of development.



The Venture Catalyst Distributed Research Incubation and Venture Engine (DRIVE™) program provides startups with access to a distributed network of thematically oriented business incubators with affordable, mixed office/lab spaces, and access to research and development equipment and specialized instrumentation. Management and leasing of the facilities in the DRIVE network is handled directly by Venture Catalyst's incubator partners. To supplement the resources enabled by the DRIVE Network, the Venture Catalyst Discounted Access to Research and Translational Services (DARTS™) program offers START™ program participants access to research and development services and state-of-the-art technology and equipment at Campus Core Facilities that have partnered with Venture Catalyst, utilizing a discounted fee structure compared to standard for-profit, private industry rates. Venture Catalyst also provides access to reserve its Innovation Room with meeting space, video-conferencing equipment and Zoom Room capabilities to enable student and faculty entrepreneurs to host business meetings and connect with potential partners and investors.



Facilities, Insurance, and Payroll: Making the right forward-looking decisions about workspace needs, insurance coverage, banking services, accounting and payroll soon after company formation, is important so that the startup team can concentrate on advancing the technology, developing the product and building the business.

The Venture Catalyst VentureNet™ program connects University entrepreneurs with providers of startup business and technical services offering special packages and preferred rates that are designed to support effective early-stage operations with options for banking, accounting, insurance, employee payroll, grant administration, and IP strategy. For example, a start-up can set up a free business bank account in preparation for applying for and receiving SBIR/STTR grant funding and can receive discounted support services for accounting and financial management to successfully manage grant funds.

Important University Requirements and Considerations for Faculty Innovators

The University has a number of policies and rules that govern faculty members' non-academic and private activities. Key considerations are summarized below but, faculty members are encouraged to consult their School/College associate deans and administrative staff as well as academic affairs for more information.

Misuse of University Resources—Faculty may not use University resources (laboratory or office space or equipment, University employees, etc.) for personal or commercial purposes. This also applies to SBIR grants. While a company (such as your startup) can subcontract a percentage (specified by the agency) of its proposed research to be conducted under your supervision in your lab, you may not use University resources, facilities, or personnel to satisfy the company's portion of the research project. This must be performed at the company.

Conflict of Commitment/Outside Professional Activities—Faculty are subject to the Conflict of Commitment rules delineated in APM 671 (for members of the Health Science Compensation Plan) and APM 025 (all other faculty). You must obtain advance approval from the Vice Provost (under APM 025) and from the Associate Vice Chancellor for Academic Personnel (under APM 671), if taking a founding role in a company, if acting as an executive or manager of a company, or if taking outside employment. While not onerous, these policies do impose limits on the hours of outside professional activities that faculty may perform, and also impose annual reporting requirements.



Involvement of Students in Outside Professional Activities – Faculty members must obtain the written approval of their department chair prior to involving a student over whom they have any authority in any outside professional activity (see APM 025-8.d and APM 671-8.f).

Conflict of Interest Disclosures – Faculty must disclose their interest in any company according to rules that vary depending on the sponsor(s).

The correct use of University resources, managing the potential for conflicts of interest or the perception of such, student supervision and avoiding conflicts of commitment are very important in protecting the integrity of University research and student education as well as the University's status as a tax-exempt, not-for-profit educational institution. Misuse of University resources or violation of the principles outlined above by a faculty member may result in discipline as described within APM 015 and 016 of the University's Academic Personnel Manual.

Please note that this summary is not meant to replace an in-person consultation with the Director of Research Compliance in the Office of Research. Venture Catalyst will make an introduction, and typically facilitate a first meeting with the director, for all Venture Catalyst START program participants.



Important University Requirements and Considerations for Undergraduate Student Innovators

It is important to note that undergraduate students and their startups are handled differently from those formed by University faculty, graduate students and staff. The fundamental basis for this difference is that faculty, graduate students and staff are University employees and as such, inventions made by them in the course of their employment are owned by the University. Inventions made by undergraduate students, unless they are made in the course of an employment arrangement with the University, are not subject to this obligation to assign ownership to the University. In fact, in many instances, including engineering capstone design classes, students enroll for credit in course-work, which has a required laboratory or design component through which they may end up inventing or being a co-inventor of novel technologies. This section provides specific considerations for undergraduate students to keep in mind.

In particular, if you think that you or your class team have come up with a great new invention, it is critical to evaluate and determine some key “facts.” Together, InnovationAccess and Venture Catalyst can assist you and any co-inventors determine whether you have a patentable invention and guide you to some of the resources that can help you launch a startup based on your technology, if that’s what you want to do.

Fundamental questions to answer in order to categorize the IP ownership rules that would apply to student effort in a class, are to identify (a) who came up with the idea, (b) who made any inventive contributions, and (c) the source of funds that supported the project.



Category 1—Student Originated Projects

IP that results from work done in a for-credit class, (a) based on student-generated ideas, (b) without “inventive” contributions from a faculty mentor to the execution of the project, and (c) supported by University funds dedicated to undergraduate education, is owned by the student inventors. Students can elect to pursue independent commercial development of these ideas without obligation to the University. However, students may elect to assign their rights to any IP to the University, so that the University can support and manage it as it would any other University-owned IP. While all University students seeking to form a technology-derived startup are eligible for support from Venture Catalyst, students who assign their ownership to the University, would also be eligible for the services that InnovationAccess provides to University inventors and to their share of royalty income as determined by UC’s Patent Policy.

Category 2—University Originated or Funded Projects

IP that results from work done in a for-credit class, based on faculty-proposed ideas, (a) with “inventive” contributions from a faculty mentor (or another University employee) or, (b) supported by University funds directed to research, is owned by the University. The University manages any resulting IP as it would any other University-owned IP. Students in this category, in addition to Venture Catalyst support, would be eligible for the services that InnovationAccess provides to University inventors and to their share of royalty income in accordance with UC’s patent policy. Refer to Appendix A for additional information on inventorship. Assignment of student generated inventions to the University ensures that IP that has a student-created component and in which the University has an independent ownership, is managed in a coordinated manner.

Category 3— Company Originated or Funded Projects

IP that results from work done in a for-credit class, based on company-originated ideas, which may include company inventors and/or is supported by company funds, may necessitate undergraduate students to assign their rights to the company depending on the nature of the University's arrangement with the company. Any decision as to the commercialization of this IP would typically be at the company's discretion.

Should technology developed in such circumstances result in jointly-owned IP under U.S. law, the joint owners can operate independently with full rights under a U.S. Patent. In the case of University joint ownership, the University is willing to (and routinely does) enter into a license agreement with the sponsoring company through which it grants the company exclusive rights to the University's interest in the patent such that the company has complete control over the commercial use of the IP that it will likely need to justify future investment in product development and commercialization.



Ownership and Funding Models for Inventions Derived from Undergraduate Lab and Design Projects

| Project Origin | Funding Research | Research Location | IP Treatment |
|---|---|--------------------------------------|---|
| Student Idea | Internal course-related resources | Campus facility or lab | Students own |
| Student Idea (pitched to private company) | Company gift | Campus facility or lab | Students own |
| Faculty Idea | Internal course-related resources or faculty research funds | Campus facility/ faculty lab | University owns with potential student co-ownership |
| Company Idea (non-strategic) | Company gift | Campus facility and/or company visit | Students own |
| Company Idea (strategic) | Company grant | Campus or company facility as needed | Company owns |

Irrespective of the funding source, students should be aware of any IP assignment requirement prior to agreeing to participate in any project, and discuss this with the course instructor and with InnovationAccess.



So, How Do You Assign Your Interests in an Invention to the University, and Why Would You Choose to Do So?

As an undergraduate student if you're an inventor, you may have rights to the invention (the University may too, for joint inventions). If you solely or jointly own an invention, you can file a patent application on your own behalf. You will need to hire a patent attorney to draft the patent application and prosecute it at the USPTO. Appendix A provides additional information on patents. Because UC is a public university with a not-for-profit tax status, we cannot spend UC funds to protect and manage an invention that belongs solely to you because we would be using public funds to create private gain (i.e., protecting your invention for your benefit as a private individual). So, as an alternative, you may choose to assign your invention to the University and, should the University agree, InnovationAccess will then manage the invention in the same way as if it had been created by University employees, i.e. faculty members, postdocs, staff members or graduate students. To assign ownership of an invention, you need to complete the appropriate legal documents, and staff in InnovationAccess can help you with this.

Once the University agrees and you assign your rights to an invention to the University, we treat you the same way we treat employee inventors. If InnovationAccess chooses to file a patent, the University covers the initial filing costs. InnovationAccess works closely with inventors throughout this process, as it typically has the best information about the invention and can help the University's outside patent attorneys draft the best claims possible. Working together increases the likelihood of the strongest patent being granted by the USPTO. In return for assigning your rights, UC pays the patenting costs, shares with you (and any other inventors) income and royalties received as a result of any license to the invention. At UC, inventors receive 35% of all licensing related income the University

receives after deduction of expenses. Appendix A provides additional information on inventorship. If you assign your invention to UC, you can still start a company around your technology under a license agreement from UC, but now you will have full access to services and resources we provide to employee inventors through both InnovationAccess and Venture Catalyst.

Since it's likely that student generated inventions will be co-owned (usually by other members of the student-team, faculty, etc.), it's important to understand what impact joint ownership has on the ability to effectively commercialize the technology. Under U.S. patent law, two parties can jointly own a patent. Each joint owner has what is called an "undivided joint interest," which means that both parties have full and equal rights under the patent, and can develop, license or assign their interest independently. Joint ownership (sometimes called "split title") can be problematic if a company needs exclusivity to raise funding (which is often the case) or justify spending existing funds to develop the invention. Once one party has demonstrated the value of the invention, the other party could "piggy back" on this work to create a competing product.

At the University, it is very difficult to license inventions with split title, so we often work with the joint owner to consolidate the rights so as to be able to license the entire bundle to a company. As a joint owner, you will likely find it difficult to find investors to fund the development of your startup unless these rights have been consolidated and so it makes sense to work with InnovationAccess with the assistance of Venture Catalyst, should you be interested in starting up a company based on your invention in such instances.



Since it's likely that student generated inventions will be co-owned... **it's important to understand what impact joint ownership has on the ability to effectively commercialize the technology.**

APPENDIX A

Whether you are a faculty member, student or staff innovator seeking to commercialize technology developed at the University, it is important to understand some fundamental aspects of intellectual property and specifically patents, and the rights and obligations you have with respect to these.

What is a Patent?

A patent is a “limited duration property right” relating to an invention, granted by the United States Patent and Trademark Office (USPTO). Patents give the holder the right to prevent others from making, using or selling the invention for a limited time (20 years from the filing date). The quid pro quo (the legal term for bargain) for the right to prevent others from exploiting the holder’s invention is the obligation to teach others about the invention so they can improve upon it for the benefit of society. A patent has two main components, the specification and the claims.

Patent Specification

The specification sets out the state of knowledge at the time, describes the invention, and provides the information necessary for another to make and use the invention.

Patent Claim

The claims define the limits of exactly what the patent does, and does not, cover. A patent holder only has the right to exclude others from making, using or selling what is described by the claims. A patent application contains a set of claims proposed by the patent applicant, and that set is amended and modified as a result of an iterative process with the patent examiner at the USPTO. This iterative process is referred to as “patent prosecution.”



What is a Patentable Invention?

The USPTO has developed a set of rules and procedures that govern how inventions are defined and protected through patents. In general, a patent will be granted for an invention so long as the invention:

- **Is new or “novel”:** the invention must never have been published or used in public, anywhere in the world, before the date on which the application for a patent is filed (except that for U.S. applications, the filing can be made within one year of publication or public use by the inventor).
- **Is inventive or “nonobvious”:** the invention must not be obvious to others with good knowledge and experience of the subject of the invention (those who are “skilled in the art”). Often ideas may seem “obvious” to a knowledgeable listener, when told, but the “I could have/should have thought about that” argument is not necessarily a basis for “obviousness.”
- **Is capable of useful application:** the invention must be capable of being made and used, although the “use” does not need to have any commercial value.
- **Is enabled:** the invention must be described (“enabled”) in such a way that a person skilled in the art can reproduce the invention based on what is disclosed by the inventor in the patent application in order to be able to improve upon it.



INVENTORSHIP

Inventorship is defined under the court rulings and regulations of the USPTO. Only those who have made **conceptual (intellectual) contributions** to an invention can be legally considered inventors in the United States. It is important to keep good records of when that “ah-ha” moment happens, and who contributed to the concept. Make written notes, and have an independent person (someone who did not contribute) sign and date the notes.

Who is an Inventor?

- An inventor is a person who, alone or with others, invents a new and useful process, machine, compound (a “composition of matter”) or device (an “article of manufacture”). Improvements to existing products and methods can be inventions.
- If an invention has more than one inventor, it is a “joint invention”; multiple inventors are called joint inventors or co-inventors.
- **Inventorship and authorship are not the same.** All co-inventors are typically co-authors of a scientific, research or other academic publication describing an invention, but all co-authors are not necessarily co-inventors.



Inventorship Criteria

- To be considered an inventor, you have to contribute to the **conception** of one or more of the claims of the patent not merely assist in its reduction to practice.
- Conception is “the formation in the mind of the inventor(s) of a **definite and permanent** idea of the **complete and operative** invention.” Often, a team can conceive an invention, so members of a team (but perhaps not all of the team) will be considered to be inventors.
- Conception is complete only when the idea is so clearly defined in the inventor’s (or inventors’) mind that only “ordinary skill” would be necessary to reduce the invention to practice, without extensive research or experimentation (that is, you can tell someone who knows the technology area what to do and they should be able to make it work!).
- To be a sole inventor, a person must be solely responsible for the conception as described in all the claims made in the patent application. This means that a sole inventor not only has the basic idea for the invention but also describes exactly how to translate that idea into a finished, working model that someone with the appropriate technical skill (“skilled in the art”) could create.



Joint Inventorship

Joint inventorship considerations include the following:

- Each inventor must have made an inventive contribution to at least one of the claims;
- **Communication** (in some form) between the inventors is required;
- The inventors usually have worked together, although this is not required;
- The idea(s) usually have occurred to each inventor during the same time period, but this is not required;
- It is not required for each inventor to have conceived the same part of the invention or made the same type of contribution;
- It is not required for the inventive contributions of each inventor to be of similar importance.

Do Joint or Co-Inventors Have Equal Rights to Their Invention?

Each joint or co-inventor is considered to have equal legal ownership in the entire invention without regard to the relative value of individual contributions.

A team member cannot become an inventor or co-inventor merely as a reward for hard work, friendship or even outstanding science. Gathering essential data or constructing a practical embodiment of the invention is not enough, making an inventive contribution to the patent claims is what matters.



Who Determines Inventorship?

Inventorship is determined by the patent attorney or patent agent at the time the patent application is prepared for submission to the U.S. Patent and Trademark Office.

- Inventorship determination is not always black and white; however, as much as possible, it is important that this issue be settled before the patent application is filed.
- Inventorship determination requires expert knowledge of the legal criteria on which inventorship is based. Potential inventors need to understand that initial decisions on inventorship are tentative and subject to change based on either the advice of the patent attorney or agent who prepares the application, or amendment of claims during prosecution.
- Mistakes in determining the proper inventors may be corrected after filing if those mistakes occurred without deceptive intent.

Who Owns an Invention?

Determining ownership of an invention is reasonably straightforward but needs to be examined case-by-case. If a student or employee of the University uses funds or equipment supported by funds from contracts, grants or gift funds through the University, the University retains ownership of the invention. Most work in capstone design projects falls into this category. In some rare circumstances, a student may, as a part of their coursework, create an invention without the use of any funds from the University or through discussions with faculty or staff that are not paid to be instructors for the course. In these cases, the student retains all rights to the invention.



START™ Program
Smart Toolkit for Accelerated
Research Translation



Facilitating the Creation of University
Research Derived Startup Companies

The Venture Catalyst START™ program provides the building blocks to equip UC Davis affiliated entrepreneurs with the tools, resources, and services they need to successfully form and grow robust startups.

Inventor Advantage™ Program

The Inventor Advantage Program offers University inventors the opportunity to defer up to \$15,000 of patent costs incurred until their companies are ready to license IP based on a determination by the Office of Research through Venture Catalyst in consultation with InnovationAccess. This enhances the inventor's ability to develop and move the IP to the marketplace for public goods by attracting investors, securing SBIR and other grant funding, and improving near-term financial footing.

TAP™ Programs

The Talent Acquisition Partnership (TAP™) Program is a collaboration between UC Davis Venture Catalyst and the Internship and Career Center that offers startups participating in the START™ program access to participate in the Internship and Career Fairs as an employer at a discounted registration rate.

MICA™ Reports

The Market Intelligence and Competitive Analysis (MICA™) program offers basic market reports with information such as market size, market share, regional segmentation, and competitive landscape to help entrepreneurs better frame their business opportunity, articulate their commercial challenges, and provide key elements of pitch decks and proposals used for securing funding.

LegalNet™ Partnerships

The LegalNet™ program offers startup incorporation and initial legal consultation through relationships with trusted legal partners that provide the following services at no-cost, except for associated filing fees and out-of-pocket expenses, and no requirement of commitment to continue to use their services after incorporation. Standard services include selection of the appropriate form of business structure, assistance with setting up the initial per-funding capital table, registration with appropriate authorities, standard legal documents and agreements, and preliminary review of IP position.

LegalNet™ Partnerships



Wilson Sonsini Goodrich & Rosati



Grant Workshops

Venture Catalyst organizes multi-session SBIR and STTR grant writing and submission workshops and associated hands-on, agency-specific office hours that take participants through all the steps necessary to successfully file a well-written grant application with specific focus on aspects such as crafting a well-structured research and commercialization plan, developing a realistic budget, engaging with program officers, anticipating reviewer comments, and completing necessary registrations and paperwork.

Campus Collaboration

Venture Catalyst works in close collaboration with and supports initiatives managed by the Mike and Renee Child Institute for Innovation and Entrepreneurship with a focus on helping entrepreneurs gain the knowledge and networks need to develop the commercial potential of their research and business ideas. The Institute offers several programs that prepare innovators for success, including general and thematically-oriented Entrepreneurship Academies, mentoring programs, fellowships, and the Big Bang! Business Competition and Little Bang! Poster Competition.

MentorNet™ Advisors

The MentorNet™ program provides access to a network of experienced professionals and business leaders that are available to act as mentors to help entrepreneurs address distinct business challenges and provide guidance on refining business plans, attracting investment, and growing their companies.

Meeting Space

Venture Catalyst provides access to reserve its Innovation Room with meeting space, video conferencing equipment, and Zoom Room capabilities to enable student and faculty entrepreneurs to host business meeting and connect with potential partners and investors.

VentureNet™ Program

The VentureNet™ program connects entrepreneurs with providers of startup business and technical services offering special packages and preferred rates that are designed to support effective early-stage operations with options for banking, accounting, insurance, employee payroll, and other outsourced services.

VentureNet™ Program

aws  activate



Pitch Coaching

Venture Catalyst offers multi-stage coaching and advising sessions to assist entrepreneurs in developing a strong pitch deck and effective messaging focused on attracting investment for their companies. The process includes interactive sessions with Venture Catalyst and feedback and advising sessions with investors and business leaders through the Angels on Campus program.

DARTS™ Program

The Discounted Access to Research and Translational Services (DARTS™) program offers START™ program participants access to research and development services and state-of-the-art technology and equipment at partner Camp Core Facilities utilizing a discounted fee structure compared to standard for-profit, private industry rates. Partners include the Genome Center, Campus Mass Spectrometry Faculty, Nuclear Magnetic Resonance Facility, Stem Cell Program, Center for Molecular and Genomic Imaging, Center for Nano-MicroManufacturing, Interdisciplinary Center for Inductively-Coupled Plasma Mass Spectrometry, Mouse Biology Program, and others.

EECO™ Systems

The Venture Catalyst Economic Engagement and Community Outreach (EECO™) systems program facilitates connections between startups and the Northern California innovation and economic development ecosystems to support the successful integration of startups into the regional economy through engagement with government agencies, startup and business support organizations, the investment community, service providers, and industry associations.

DRIVE™ Network

The Distributed Research and Incubation and Venture Engine (DRIVE™) program provides startups with access to a network of lean, thematically oriented business incubators with affordable, mixed office/lab spaces and integrated research and development equipment and instrumentation. Facilitated by Venture Catalyst, management and leasing of the facilities in the network is handled directly by the incubator partners.

DRIVE™ Network



