Lecture #7

Funding

Aims:

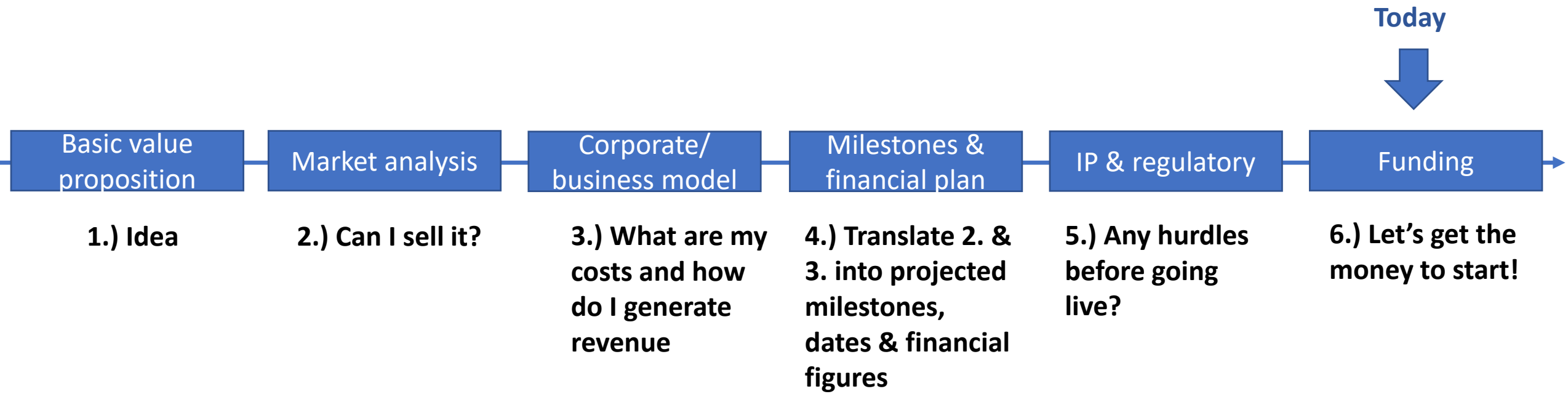
- Learn about the different funding opportunities and the right timing for the company launch.

Course content and schedule 2024

Lecture #/Date	Topic	Details	Seminar tasks
1/ 12.09	**General Introduction**	Aims of the course, expectations, tasks and assessments General proceeding	Watch Elisabeth Holmes Documentary (Theranos story)
2/ 19.09	**Roadmap from academic idea to startup**	template business example, Learn about all the steps needed to translate a scientific idea into a startup and what your pitch deck should include => Focus on Value proposition and Business model	Define customer value proposition, USPs and business model (= business example) of Theranos Grouping and assignment of individual presentations
3/ 26.09	**Market analysis**	Market size, competitors, customer models, growth and scalability,	Introduction into GlobalData, Find market data on your business example & group innovation
4/ 03.10	**Corporate planning**	Business models, exit strategies, website & visibility,	Define business example of your group innovation, define markets and competitors
5/ 10.10	**Business examples**	Business examples 1-4, detailed feedback	
6/ 17.10	**Timelines & initial steps – work plan**	Business examples 5-8 Milestones and finance plan from idea to startup/product	Find & analyze patents in your field
24.10 – no lecture!			
7/ 31.10	**Intellectual property and other legal issues**	Business examples 9-12 Patents – facts, data bases, examples Concept of freedom to operate, regulatory hurdles, etc.	Prepare milestones and financial plan for your startup idea
8/ 07.11	**How to secure funding**	Business examples 13-16 Public funding programs, investments, venture capital, EPFL programs	Finalize pitch deck
9/ 14.11	**Finalizing the pitch deck**	Business examples 17-20 Final feedback on individual case studies, last year's best group pitch, time for questions	
11/ 21.11	**Guest speaker Daniel Alpern (EPFL entrepreneur)**	Business examples 21-24 Introducing Catlyze4Life	Prepare Executive Summary and commercial potential in C4Lformat
12/ 28.11	**Guest speakers Gautam Maitra (EPFL C4L)**	Introducing EPFL Launchpad Initiative	
13/ 05.12	**Pitches Groups A (e.g. 4-6)** **Feedback Groups B (e.g. 1-3)**	10min pitches with non-presenting students to provide written feedback, Submission of Executive Summary and commercial potential in C4Lformat	Prepare written feedback on other group's pitches
14/ 12.12	**Pitches Groups B (e.g. 1-3)** **Feedback Groups A (e.g. 4-6)**	10min pitches with non-presenting students to provide written feedback, Submission of Executive Summary and commercial potential in C4Lformat	
15/ 19.12	**Trophy Award & Feedback**		

Group	Students	Date Business Example	Company	Date Group Pitch
1	Jakob Behler	2024.10.10	KetoSwiss AG	2024.12.12
	Danja Zengaffinen		Impli	
	Marguerite Derwael			
	Nestor Melissargos			
2	Gian Maria Velardi	2024.10.17		2024.12.12
	Daniel Selmin			
	Alice Canuti			
	Léo Cusumano			
3	Viola Renne	2024.10.31	SelfDecode	2024.12.12
	Marija Zelic			
	Berta Céspedes			
	Sarra Chaabane			
4	Paloma Aubert	2024.11.07		2024.12.05
	Carlota Imbert			
	Nouchine Bouchiat			
	Laura-Rose Hassan			
5	Kamil Lahlou	2024.11.14		2024.12.05
	Ali Mekki Berrada			
	Benjamin Aouzir			
	Camille Pittet			
6	Sara Vannay	2024.11.21	Notable Labs	2024.12.05
	Aygul Bayramova			
	Zhibo Zhao			
	Ruike Yan			

Today's lecture



Road to founding a startup

Commercialization

1. What is the **USP**? Is there a **market** and how big is it?
2. How do I address my **customers**, what is the **business model**, is it **scalable**?
3. What is needed (**time, budget and resources**) to develop a minimal marketable product (**MMP**)?
4. Do I have **patent protection** and **freedom to operate**? Any other **legal or regulatory hurdles**?
5. How to secure **funding**?

Which public funding opportunities exist?

When to involve external investors and how?

What support can I get from EPFL?

What do I have to prepare to pitch for funding?

=> today's lecture on funding PLUS guest lectures by Gautam Mitra (C4L) and EPFL entrepreneurs

Funding sources for the different stages of a startup (or idea)

1. **Purely academic funding and grant schemes** such as Innosuisse, Bridge, ERC proof of concept grant
    - Particularly useful for early stage tech development

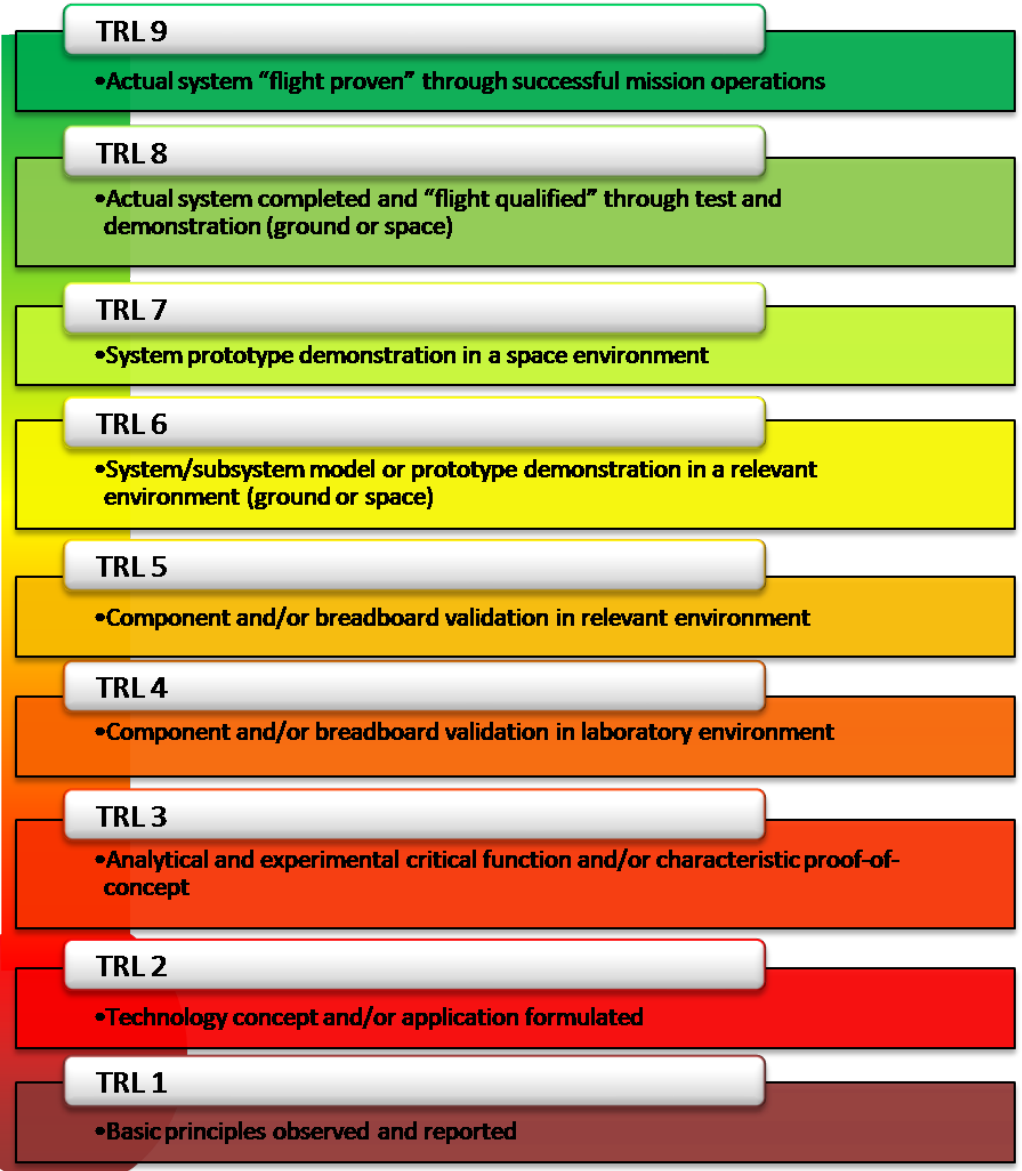
2. **Collaboration with Industry**
    - Useful for getting feedback on customer needs and for developing technology in the right direction. Also increases visibility

3. **Startup competitions and EPFL-internal funding schemes**
    - Relatively small amounts of money, but increased visibility and clear product focus

4. **Investments and Venture Capital**
    - Potential for large budgets, but useful only after a significant pre-money value has been reached

Timing for choosing the right funding schemes

NASA



https://www.nasa.gov/directorates/heo/scan/engineering/technology/technology_readiness_level

EU

•TRL 9 – Actual system proven in operational environment (competitive manufacturing in the ca… enabling technologies; or in space)

•TRL 8 – System complete and q…

•TRL 7 – System prototype … operational environment

Funding through external investments (too expensive for academia, too slow in an academic environment)

•TRL 6 – Technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies)

•TRL 5 – Technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)

•TRL 4 – Technology validated in lab

•TRL 3 – Experimental proof of concep…

•TRL 2 – Technology concept fo…

•TRL 1 – Basic principles observed

Mostly academic funding (too early to get good investments)

https://enspire.science/trl-scale-horizon-europe-erc-explained/

1.) Academic funding and grant schemes

BRIDGE

Bridge programme

www.bridge.ch

BRIDGE is a joint programme of the Swiss National Science Foundation SNSF and Innosuisse - the Swiss Agency for Innovation Promotion. It offers funding at the interface of basic research and science-based innovation.
BRIDGE consists of two funding schemes:

Proof of Concept is aimed at young researchers who want to develop an application or service based on their research results.

- funding of up to 130k for up to 12(+6) months

Discovery is aimed at experienced researchers who want to explore and realise the innovation potential of research results.

- funding of up to >500k CHF

1.) Academic funding and grant schemes

Innosuisse programme

www.innosuisse.ch

Funding of >500k CHF either with an exploitation (industry) partner OR without a partner, but a clear focus on founding a startup

Does not only provide funding, but as well offers **coaching and trainings** for startups

Also provides a **network of experts** and opportunities for many relevant aspects for founding a startup

Provides discounts for participating at international **business conferences**

Compared to the Bridge programme, Innosuisse focusses on projects that are already at a **more translational level**

1.) Academic funding and grant schemes

ERC proof-of-concept programme

https://erc.europa.eu/funding/proof-concept

Funding of up to 150k Euro for projects that are related to an existing ERC grant (basically translational efforts branching off from the ERC grant)

Only available for ERC investigators (holding a starting, consolidator, advanced or synergy grant)

CH is currently not eligible (but this could change in the future)

2.) Collaboration with industry

E.g. **funding of a postdoc** plus consumables, typically for no more than 2(+1) years. Note that **IP shares** have to be defined!

Can e.g. be initiated at **scientific conferences** in your particular research field that are **attended by industry people** (good examples are PEGS for Biopharmaceuticals). Note that many of these conferences offer to **schedule meetings** with other participants prior to the meeting

Might be **based on** follow-up (by industry) after a **publication** of yours or after launching your **website.** It's all about visibility!

Can be initiated through your **industry contacts** (let them know what you have – they might now matching partners)

Can also be requested for by you, but this might look a bit "aggressive and desperate" and should only be tried in exceptional cases and only for projects that are somewhat advanced. How can you get in touch with a company CEO that you have never met before?

2.) Collaborations with industry

To: customerserviceinfo@unilabs.com
Subject: Personalized Cancer Therapy

--- please forward this Email to Jos Lamers ---

Dear Jos Lamers,

I am running a research group at EPFL developing novel diagnostic solutions for personalized cancer therapy (www.besttherapyforme.com). In brief, we have developed an approach allowing to determine the best therapy option for each patient by directly testing 50+ drugs and combinations thereof on patient material. The results are available within 24h after taking a biopsy or after resecting the primary tumor, at internal consumables cost of less than 150 US$. The approach is entirely target agnostic, does not require any biomarkers and can in principle be applied to all kinds of tumors. Furthermore, using our approach we have already shown an improved outcome in animal models bearing human tumors (Eduati et al., Nature Communications 2018).

We are now planning to exploit this platform commercially. For this we have already been in touch with several diagnostic companies in Germany, but after my move to Switzerland (in January 2020) it seems useful to team up with local partners. Please let me know if you would be available for a quick phone call to discuss this further.

Many thanks and best,
Christoph

Prof. Christoph Merten
Swiss Federal Institute of Technology Lausanne (EPFL)
School of Engineering
Department of Bioengineering
Laboratory of Biomedical Microfluidics (LBMM)
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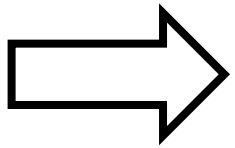
Phone: +41 216934296
christoph.merten@epfl.ch
www.epfl.ch/labs/lbmm

3.) Startup competitions and EPFL-internal funding schemes

- Imagine IF!: https://inno-forum.org/accelerator/
- Startup champions Seed night: https://www.venturelab.swiss/startup-champions-seed-night
- Venture competiton: https://www.venture.ch/
- Business Growth Biotech: https://www.startupticker.ch/en/events/business-growth-biotech-%282%29
- Start Lausanne competion : https://startlausanne.ch/
- Business Creation Medtech: https://innosuisse.venturelab.ch/index.cfm?page=135529&event_id=8033
- Medtech Innovation Event: https://medtech-innovation-event-2021.b2match.io/home
- Swiss Medtech Day: https://www.swiss-medtech.ch/en/swissmedtechday
- Innovation by Design Challenge: https://innovationbydesignchallenge.ch/#home
- W.A. de Vigier Award: https://devigier.ch/devigier-application/
- Swiss Medtech Award: https://www.swiss-medtech.ch/en/swiss-medtech-award
- Venture kick: https://www.venturekick.ch/
- GEW InQprize: https://inqbator.ch/applygew/?cn-reloaded=1
- Starseed: https://www.seedstars.com/
- Venture leader Medtech: https://www.venturelab.swiss/venture-leaders-life-sciences
- Prix PERL: https://www.lausanneregion.ch/entreprises-economie/perl/perl-prix-entreprendre-region-lausanne/



Most of these competitions award prizes with a volume of >>100k, but you can gain visibility and establish networks

3.) Startup competitions and EPFL-internal funding schemes

EPFL

Ignition Grants

A chance to validate your project

We know it's hard to break the "too early" barrier. We want to nurture the most promising opportunities in our labs and help them become the success we know they can be.

With an Igntion grant, you'll have a first opportunity to validate your project and get ready for future grants.

What is the purpose of the grant?

The Ignition grant is early stage funding, giving you a chance to validate your technology and develop a first prototype or find your right market fit.

The **CHF 30K** can be in the form of a salary and/or of consumables and/or outsourcing needs. The grant is for a maximum of **6 months**. You will need be hosted in an EPFL Lab where you will be incubating your spinoff.

* Cannot be combined with other financial support from the EPFL Startup Unit at the same time

Funding volume = 30k per project!

3.) Startup competitions and EPFL-internal funding schemes

© Catalyze4Life

School of Life Sciences

https://catalyze4life.epfl.ch/

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Project Title:		**TTO Technology Number or Patent Reference Number if Available**
Researcher name (s) and contacts (Faculty/ies), Institute/s)		
Technology Transfer manager	**Your contact at the TTO**	
Catalyze4Life manager	**Gautam Maitra**	
Supporting PI Authorizing Application		
Project type and requested funding: (please, indicate the amount of funding per category)	Preclinical Proof of Concept/Validation (CHF): Clinical Proof of Concept (CHF):	**Comments**
Executive Summary (Brief description of technology/invention; maximum 200 words describi… the technology and the main differentiator against a market benchmark):		
Brief description of commercial potential of project (few lines referring to specific application/s and market)		
How Catalyze4Life will facilitate the technology transfer of your technology: Indicate tangible and applicable deliverables previewed post Catalyze4Life support (e.g. New IP, facilitate Licensing-partnerships-Start up, etc)		

Funding volume = 30k per project!

TANGIBLE MILESTONES (Milestone Descriptions: 500 characters maximum including spaces)

Present the project as a sequence of milestones, with clear tangible and applicable deliverables (ie; Patents, Prototype, Validation with animal model, etc). The milestones will be used, based on deliverables reports, to track the progress of the project over the course of the funding period. Only successful completion, and approval, of the milestone deliverables report, based on a Go/No Go decision by the C4L Scientific and Industrial Committee, will trigger the release of the next funding tranches. **C4L shall be responsible only for the approved milestone costs and shall not pay any overspending or next milestone costs without approval of the previous milestone report.**

Milestone 1 Description	Tangible Deliverables (ie; Patents, Prototype and assay read outs, Validation with animal model, etc
Milestone Duration (ex: 01.11/2018 to 0…	
Mileston…	
…verables	
…ilestone 2 Description	
Milestone Duration (ex: 05/2021 to 10/2021)	
Milestone Budget	
Milestone Deliverables	

Has this project been submitted to other funding sources? (the technology and/or the field of the application for the technology should not be already partnered or otherwise subject of technology transfer activities)
Please add any comments/information (including issues and/or conflicts), important for your application

3.) Startup competitions and EPFL-internal funding schemes

Brief exercise (as a preparation for written funding applications and pitches):

- Prepare a short **abstract summarizing your startup idea** and your assets. **Max 5-8 sentences!**
- Start introducing yourself with a simple and clear take-home message, e.g. “We are [Project Name] and we aim at revolutionizing cancer therapy”
- Describe problem, market size and YOUR solution
- Avoid being vague – present numbers and facts

Please send your abstract to christoph.merten@epfl within the next 15min!

I hope this message finds you well. I am reaching out to introduce GlutenGuard, a pioneering solution designed for individuals with gluten intolerance and Coeliac disease. GlutenGuard offers a unique digestive enzyme pill that allows users to safely consume gluten, significantly improving their quality of life. Our product addresses a substantial market need, as millions of people struggle with gluten-related issues.
We are currently seeking investment to advance our clinical trials and prepare for market launch. I believe your expertise aligns well with our vision.

I would appreciate the opportunity to discuss this further and explore how we can work together to bring GlutenGuard to those who need it. Thank you for considering this opportunity.

Best regards,

Sara Vannay
CEO, GlutenGuard

We are IronMAN a groundbreaking startup aiming at revolutioning treatment for hemochromatosis. Hemochromatosis is a genetic disorder characterized by excessive absorption of dietary iron, leading to iron overload and potential damage to organs such as the liver, heart, and pancreas. This is especially due to lack of a hormon called hepcidin. This disorder is one the most spread inherited disease in the occidental world, with over 1 million affected people in the US. However, the only way to treat this condition for now is by monthly blood collection from patients which can be very invasive and exhaustive. Inspired by new innovation to treat conditions such as diabetes with oral administration of insulin, we aim at developping an oral solution containing hepcidin agonists. The product would be taken every day by the patient and would cost ~20$ for 10 pills.

If you are interested in discussing potential investments and be part of our journey you can contact us back at kamil.lahlou@epfl.ch

We will develop a quick-acting anti-nausea medication delivery system that uses a pouch similar to a snus. The benefit of not having to swallow nausea medication does not only ensure rapid absorption and relieve within minutes or even seconds but it will also prevent medication loss through vomiting. It is very convenient in the form of small pouches and easy to use. The technology can easily be expanded to other medications such as diarrhea medication, painkillers or panic attack medication. It will present benefits for all medication types that require fast effect in situations where non invasive administration is preferred.

Group 1

We developed an innovative drinking bottle which analyses mineral composition of liquid notably the concentration of PFAS or other toxic substances.

Filters can be flavoured to give soda or juice-like characteristics for customer loyalty.

Going for first stages for FDA approval. Still looking for investors.

4.) Investments and Venture Capital

How and where do you get in contact with possible investors?

- startup competitions

- network of your local TTO

- business developers of key companies which you can e.g. meet at specialized conferences such as:

  www.bio.org
  https://informaconnect.com/bioeurope/
  www.medica.de

Image source: thenounproject.com

How to determine the pre-money value of your startup (or idea)?

- **Sum up all academic grants that have resulted in tangible deliverables (IP, tech prototypes, specialized knowledge, etc.). In our case this comprised:**
    - 120k Euro Tech Development Grant
    - 820K Euro EXIST
    - 678k CHF Innosuisse
    - 734k CHF PHRT
    - **Total = about 2.4M CHF**

- **Add all intramural funding that has enabled tangible deliverables (IP, tech prototypes, specialized knowledge, etc.). In our case this comprised:**
    - **> 2M CHF intramural EMBL/EPFL funding** for personnel having worked on the project (5 scientists over 10 years) and consumables.

- **Tangible deliverables**
    - **Two granted patents** plus two pending patents
    - **Clear product prototype and business model**
    - Successful **proof-of-concept** in xenograft mouse models
    - Successful **processing of human tumor samples**
    - **Competitive product price**
    - Multiple companies (pharma & diagnostics – provide names) and investors **have already shown potential interest in partnering** prior to ANY marketing!
    - **Clear scientific excellence**, based on host institute and publications

- **Market potential**
    - Product potential can be estimated when looking at Foudation Medicine (within 10 years from startup to takeover by Roche for **3.4 billion US$**). Of course we believe our product has advantages beyond the state-of-the-art.

Based on the above facts (emphasis on facts!) a proposed pre-money value of 5-6M CHF seems to be a good starting point

BIO-490 students tasks for today/ this week

- **Prepare a funding plan for your startup idea**
  - **What size of investment is needed and how are the timelines (see financial plan from lecture 5)?**
  - **What public and private funding can be targeted and how does this match the needs in terms of volumes and timelines (see financial plan from lecture 5)?**
  - **Propose and justify the pre-money value of your startup**

- **Have a first look at the C4L application form and identify what info is needed**

Questions?