



DESTINATION STARTUP

Vitro3D

One-Sentence Summary of What You Do: Vitro3D is a 3D printing for life sciences company bringing printers to the patient point-of-care with a beachhead market in the dental industry.

Affiliated Institution: University of Colorado Boulder

Have you formed a company yet? Yes

Funding/Financing: Direct/Indirect University Support

Please describe your company and the problem you are trying to solve: The dental aligner market is the biggest user of light-based 3D printing in the world, but current manufacturing methods are slow, wasteful and inefficient. The biggest pain point this industry faces is a massive waste of time and resources 3D printing molds that are later used to later create aligners instead of 3D printing the dental aligners themselves. Our solution is to directly print dental aligners using a brand new volumetric 3D printing method which is cheaper, faster and easier to use. Using the Vitro3D Volumetric Cartridge Printer, we allow dentists to make custom aligners in-house, thereby solving the largest pain point in the market.

In extensive customer discovery interviews, dentists and orthodontists claimed that patient outcomes are impacted due to ill-fitting dental aligners caused by delays in receiving their aligners and lack of doctor supervision throughout the treatment. Delivery of the first aligners to patients can take anywhere between 2 to 9 weeks due to the outsourcing of manufacturing. The molds used to create the aligners are single-use disposable products and 10 to 20 are created for each patient over the course of their treatment, which is a wasteful and unsustainable process. By bringing aligner manufacturing to the point-of-care, patients receive their aligners during their visit, the dentist or orthodontist is able to provide input to their treatment plan, and no wasted molds are created. The 3D printing technology used to fabricate Vitro3D's aligners has been established and validated at CU Boulder. The structures are fabricated using a proprietary 3D printing method (US Patent 10,647,061 B2, and Application 17/149,423) that allows for microscale control of mechanical properties and resolution.

What is/was your go-to-market strategy? The length of time required for delivery of dental aligners to patients results in increased costs to the patients, lower patient adoption, and worsened patient outcomes. The cost of aligners to patients can range from \$2000 to \$8000 depending upon the quality of treatment they are able to receive. By bringing the aligner manufacturing to the point-of-care and allowing for dentists and orthodontists to guide treatment throughout the regimen we will reduce total treatment time, improve patient outcomes, and reduce cost as well as waste.



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The existing 3D printing solutions in dental offices utilize the same manufacturing process as those used in major aligner manufacturing facilities and require skilled technicians, specialized tools, and multi-hour wait times. Our go to market strategy first consists of providing aligners to early adopters as a service to validate our manufacturing method and later leasing printers to dental offices with pricing based upon total aligners manufactured.

The dental aligner market is valued at \$3.1B and is expected to grow at a CAGR of 29.5% between 2022 and 2030. Vitro3D is bringing a disruptive technology to an increasingly competitive market with the goal of improving patient outcomes. By impacting the dental industry using our revolutionary printer technology, we then envision the technology expanding to other patient focused markets.

How will/do you generate revenue? Vitro3D will lease our proprietary volumetric 3D printer to dentists and orthodontists with a pricing model based upon the number of aligners manufactured in an individual office.

To generate revenue using this model, we will pursue the following timeline:

- Q1-2 2022 - Complete pre-seed raise of \$1.5M to fund initial technical milestones and grow the team with a product development engineering team.
- Q2 2022 - Q1 2023 - Engage materials partners and complete technical milestones required to demonstrate the capability to print a full aligner.
- Q2 2023 - Q1 2024 - Build the first beta volumetric printer for manufacturing dental aligners and complete a soft launch with early adopters to start gaining market feedback.
- Q2 - 3 2024 - Obtain 510(k) FDA clearance by demonstrating substantial equivalence to existing dental aligners (no clinical trials required).
- Q3-Q4 2024 - Manufacture and sell dental aligners as a service to early customers while developing a beta printer capable of being in the dental office.
- Q1 2025 - First printers leased to dental offices.

By leasing a volumetric 3D printer, dentists can maintain their current digital dentistry workflow with patients starting aligner treatment while reducing the wait time to get a patient their aligners. By reducing treatment time and improving patient outcomes, a premium aligner service will be offered over competitors.

How will this showcase benefit your company or technology? Vitro3D is excited to collaborate with the intermountain west community and want the community's help to shape our pathway to market by participating in Destination Startup. We have three primary goals as a company that will help us reach the market in an effective manner that we are looking to fulfill through this showcase:

- Secure investors to participate in our current \$1.5M pre-seed fundraising round.
- Identify strategic partners to help establish a relationship with dental partners, material partners, and the FDA.



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- Grow our team by including an operations and product development engineer to ensure consistency and quality in our offering.

This showcase will allow us to introduce our technology to the broad Colorado startup community and make key relationships that will help our company moving forward. By finding partners to codevelop our technology, we can bolster the growing deep-tech industry in the mountain west. We are looking to grow Vitro3D within the community and utilize the talented pool of researchers and engineers in the front range. Lastly, we are looking for sustainable investment by connecting with investors interested in solving deeply impactful problems that result in lasting change.

Who are the members of your team and why is this the right team to get the job done?

Founded by Dr. Camila Uzcategui and Dr. Johnny Hergert, Vitro3D is the best team to execute on the mission of impacting the life science market using 3D printing. Our team is also composed of Jennifer Howard (MBA'22) who manages operations and marketing. Our scientific advisory board includes the inventors of volumetric 3D printing, Dr. Maxim Schusteff and Prof. Hayden Taylor, as well as Prof. Robert McLeod, a co-inventor along with Camila and Johnny on patents central to this technology.

Valuable mentor relationships have been established with experienced entrepreneurs including two entrepreneurs in residence (EIRs) at CU Boulder, Gràinne Barron, CEO and founder of Viddyad, as well as Eric Hoffman, president and founder of Evolve Biosciences. Their combined expertise in startup development, including bioscience companies, provides a strong level of business expertise to the team. Additionally, Vitro3D has current engagements with SAGE, a pro-bono mentoring organization associated with Innosphere Ventures, which supports early-stage science and technology companies in Colorado. As part of the SAGE engagement, Vitro3D is partnered with a team of advisors to provide personalized advice on diverse business development topics.

In summary, we have a strong and experienced team ready to execute our initial plan and will expand our team as we scale the business in pursuit of reaching the market.