

general inception.

Founding Story: Partillion



Dino Di Carlo, PhD
Innovator



Joe de Rutte, PhD
Innovator



Kelly Kaihara, PhD
General Inception

After working in microfluidics for decades, Dr. Dino Di Carlo from UCLA wanted to solve a major pain point in the industry – each new application required new instrumentation. What if, he thought, researchers could perform novel microfluidics without new instruments and instead use existing technologies? With this idea, Dino and his lab began working on different approaches to solve the problem. Joe de Rutte, a PhD Student in Dino’s lab came up with the solution – nanovials. This was the inception of Partillion.

DINO DI CARLO, PHD

What problem is Partillion solving in the life science marketplace?

The key advantage in microfluidics is measuring single things, like a cell or a molecule, in small volumes of fluid. Advancements in microfluidics over the last decade have enabled new research including single cell transcriptomics. But each new application has required new instrumentation which creates barriers for researchers to access these capabilities. There is only so much budget and bench space a research team has.

With my experience working in microfluidics for decades and spinning out many companies, I understand the difficulties facing researchers when trying to access new capabilities. I wanted to challenge the conventional thinking that each new application needs new instrumentation. Instead, I wanted to figure out how we can leverage existing technologies. Our lab began designing microparticles to replace the actions performed in microfluidics with actions performed in solution with ordinary pipettes and compatible with existing instruments. The next problem to solve was how to scale. After attempting many different options, Joe realized that the manufacturing processes that he created for spherical particles for tissue engineering applications was compatible with our biology and could scale.

JOE DE RUTTE, PHD

What technical hurdles did Partillion have to overcome?

I realized that if the process was too complicated it wouldn’t be adopted. At the same time, I needed to solve the problem of how our solution would be used for various applications like cell line development. Big pharma has access to assays and instruments, academic groups want to do assays but typically can’t afford big instrumentation. Also, the majority of researchers don’t have a solution to easily adopt new workflows without bottlenecks.

Once we started testing out our nanovial approach, we were able to come up with a high-throughput, sophisticated, and simple solution that can scale. We developed nanovials to look at secretions from single cells using only normal lab tools. By removing any custom components we enabled a solution that is accessible to any lab and application. Throughout the development process we spoke with potential customers. We wanted to ensure our solution was meeting the needs of the industry. At the 2020 Society of Laboratory Automation and Screening (SLAS) meeting we won the Innovation Award for top research presentation. That was the signal that we had a great idea.

DINO DI CARLO, PHD

How did you start Partillion?

We started Partillion in 2020. Several people suggested we should meet Paul and partner with GI as Paul had been an early investor in 10X Genomics and QuantaLife and could bring deep experience in the single cell space. At the same time, we were introduced to Rowan Chapman, co-founder of Initiate Studios who had relevant industry experience as well. Ultimately, GI and Initiate worked together to serve as guides and co-founders to help with the essential elements of company building.

JOE DE RUTTE, PHD

What was the advantage of partnering with GI?

As we were thinking about how to form our company, we realized we could do a lot with few financial resources. More important to us than pure dollars was having access to experienced people that could help us grow strategically. We understood that partnering with General Inception and Initiate Studios would enable us to access experts in our industry that could help shape our company. We chose this path rather than taking early venture capital money.

DINO DI CARLO, PHD

What roles and responsibilities has GI provided?

Over the past three years, the GI team has fulfilled many roles. We've had regular meetings with Paul and Rowan. Paul has been like a quarterback bringing in his network for advice and members of the GI team to fulfill essential roles. Paco Cifuentes helped build out pitch decks, financial models, and helped us work through assumptions. He helped us with product management, assessing the market, our value proposition, and how we differentiate ourselves in the marketplace. Kelly Kaihara came in to help us figure out our first applications and has served as a guide in how to launch and market our products. Her experience in the single cell space has been invaluable in assessing product market fit and our first product for market entry.

KELLY KAIHARA, PHD

How did you get involved with Partillion?

Paul introduced me to Dino and Joe to help them come up with the next "killer applications" for their nanovial technology. I had worked at single cell companies before joining GI, so I understood the application space and market potential.

What initially got me excited about Partillion was the capability to perform multiomic measurements with existing technologies on the market. When we started layering on protein, DNA or RNA, we could understand different populations and get more definitive subpopulations that gave us more insights into disease states.

Their product roadmap had this application - layering on multiomics to the single cell secretome with transcriptomics and proteomics - in 2024. I encouraged the team to fast track these applications.

Working with the UCLA Core Lab, they were able to test the technology on the 10X Chromium instrument and it worked. That project led to their paper on SEC-SEQ (Secretion Encoded single-Cell SEQuencing) and demonstrated that the nanovials provided readouts on what cells are secreting in addition to surface protein markers and transcriptomics, all from the same single cells. Altogether, this new method enables researchers to fully explore the links between genome, proteome and cellular function, to enable new discoveries in oncology, neurobiology, stem cell biology and beyond.

In another application, with the ability to keep the cells alive - after FACS - cells can be cultured and additional downstream applications can be performed, based on the function of the cells. Both of these applications combine the power of measuring cellular function and the secretome at the single cell level with downstream multiomic applications, all at high throughput and low cost.

JOE DE RUTTE, PHD

How did GI help with company strategy?

We talked with Kelly early on. We hadn't fully flushed out our applications and within six months, she helped confirm applications in the single cell space and broaden our application space. She was also really helpful strategizing our hiring plans. As a brand new founder out of grad school, I didn't know much about company building. I really relied on my advisors and the network at GI. I got to access experts in marketing, product development, and finance. I never felt a barrier to ask questions. The team helped jump start my learning to be a successful CEO.

KELLY KAIHARA, PHD

Dino and Joe were really great about talking to the leading players in FACS and the single cell space. I helped them understand how these relationships could support the company from co-marketing opportunities, to salesforce training, selling and distribution. What is powerful for Partillion is that none of the players are competitors - they are all potential partners and acquirers. Their business model enables them to be an addition to current product portfolios at other companies and opens the door to many new applications and research discoveries by scientists in a multitude of fields.

JOE DE RUTTE, PHD

What has been one of the most helpful aspects of the partnership?

One of the biggest lifts has been the fundraising help we received working with GI. They have helped us think strategically about fundraising and made many warm introductions for us before we went out to pitch. I was a postdoc when I started working on the Partillion project. Having a mentor like Paul has been invaluable.

KELLY KAIHARA, PHD

What has been your experience working with the Partillion team?

I have loved working with Dino and Joe. This is Dino's sixth start up. Even so, he understands the value of GI and leveraging the experience of our team. Joe is new to business, but has done everything so well. Throughout the whole relationship with GI he has proactively reached out for help and wanted to learn everything about company building. Partillion demonstrates that with the right support, anyone can be a founder.

The venture capital community believed in Joe as well. Despite being a first-time founder and CEO, they raised their Seed Round of funding within their time frame. UCLA and the Magnify Incubator space enabled the early work inexpensively. From the start Dino supported and mentored Joe on his entrepreneurial journey. GI and Intiate Studios helped build the company. Partillion is an example of great teamwork coming together.

DINO DI CARLO, PHD

Final thoughts?

We closed our institutional Seed Round on December 22, 2022. The hardest part of founding a company is the first investment check. The GI model made it easier.

GI jumpstarts and accelerates everything. They have an experienced team to reach out to for advice and getting things done. While many companies have advisors, GI is active in doing the needed work fast. With their executives team, it isn't a burden to bring on the right people for specific projects at the right time. For most companies this is a burden. It really helps avoid mistakes and lost time. Timing is so important in new companies from bringing on the right people to getting ready to raise money. GI also provides a community of other people and other GI companies. This feeling of community and people going through the same things and sharing ideas is really powerful. With GI you don't figure things out on your own, there are others to help and in turn you can also give back.