

Ganymed Robotics

Category:

Best Startup

Company Name:

Ganymed Robotics

Turnover and/or Funding:

39m€ Series B + extension (2022-23)

No turnover

Sub-Category:

Medical Technology / Digital Health

Corporate history (creation, key milestones, main funding,...) Information on Condition / Disease and need for solution / product (prevalence, existing treatments / solutions):

Ganymed Robotics' mission is to make quality surgical care more accessible through technology. Founded in 2018, the French MedTech has developed a robotic assistant for orthopedic surgery, with knee replacement as a first indication. A team of 42 people based in Paris is currently industrializing the company's patented technology platform, combining advanced computer vision software and robotics technologies. Ganymed Robotics has raised 39m€ in 2022-23 with a high-profile group of investors led by Cathay Health to prepare for commercial launch in 2026, once FDA approval has been obtained. Ganymed Robotics has already validated its technology both technically - with strong in-vivo and preclinical data - and in market terms - with excellent reviews from KOL surgeons and industry leaders

during the 30+ demos performed. Ganymed Robotics is now in marching order to perform its first-in-human clinical trial in early Q2 2025.

Total Knee Arthroplasty is a complex procedure. The problem we're trying to solve is that the conventional way of performing TKA hasn't evolved over the past 40 years, and that 20-25% of patients are not satisfied with the outcome. Manual procedures - 88% of procedures - are invasive, highly surgeon-dependent and lengthy with high variability in operating time (45-180min). These procedures show some performance issues and suboptimal results.

The first generation of surgical robots (Mako, Rosa, Velys, etc) attempted to solve this

dissatisfaction problem, but none of them has gained significant market acceptance – the adoption rate is only 12% to date. Indeed, although they address the issues of surgeon dependency and performance quite well, they completely neglect the issues of time and invasiveness. The value proposition of first-gen surgical robotics primarily lies in standardizing procedures to ensure that every patient receives optimal treatment on a consistent basis. But these first-gen robots lengthen operating times, add complexity and are highly invasive due to the use of percutaneous optical trackers. Moreover, they do not meet the needs of surgeons & hospitals in terms of surgical & costs efficiency. They are costly – with high upfront costs and an extra technician required in the operating room – and bulky – with a large footprint that doesn't fit into any OR. Ganymed Robotics' next-generation robot-with-eyes is tailored to the needs of both surgeons and patients in terms of clinical outcomes, surgical & costs efficiency.

History of the development of the solution/product (Intellectual Property, preclinical and clinical datas, development collaborations):

Since its inception in 2018, Ganymed Robotics has experienced rapid growth in terms of R&D. The Design freeze of our robot-with-eyes (MVP – minimum viable product) was completed at the end of 2023 and the company has now entered the verification & validation phase.

Ganymed Robotics has already technically validated its MVP (minimum viable product) with strong in-vivo and preclinical data

. In 2021, the company validated its core proprietary computer vision technology (markerless bone registration) through an in-vivo clinical study on 100 patients, a world first. The company also demonstrated the performance of its robot through 13 preclinical studies with KOLs and newly trained surgeons. In 2023, the company completed its first preclinical study with an industrial partner – and thus its first implantation of commercial prosthesis – paving the way to a potential partnership. Ganymed Robotic has also obtained market validation in 2023. The company collected extensive feedback from US surgeons and international implant manufacturers during demonstrations at the AAOS (American Academy of Orthopedic Surgeons) congress in Las Vegas and at our offices in Paris, setting the stage for a strategic partnership for our upcoming clinical trials. The feedback received has been a mix of extremely positive comments and constructive suggestions (e.g. remarks related to BMI, special features, etc.). Ganymed Robotics is therefore confident in the features set of its robot and has initiated the industrialization of its first device (MVP) with the support of its long-standing manufacturing partners based in France.

In 2023, the company has also been working on VOC (Voice of Customers) studies to gather the views of hundreds of surgeons on TKA and first-gen robotic solutions. These studies confirmed that Ganymed Robotics' value proposition matches surgeons' needs in terms of design, bone registration and ease of use, among others. Ganymed Robotics

is now in the process of completing its US Surgeon Advisory Panel to get additional market insight on the ASC (Ambulatory Surgical Centers) segment we are targeting. In terms of intellectual property, the company has secured a robust patent portfolio - with 10 families of patents published to date on both hardware and software components in the US, Europe and Asia.

Regarding regulatory affairs, Ganymed Robotics has been interacting with the US regulator and the FDA for some time now. The company is in a pre-submission process and already validated with them that it can go through a 510K pathway and not a de novo, which gives more certainty on timelines. Ganymed Robotics had its first Q-Sub meeting with the FDA mid-2023, the second Q-sub meeting in early 2024 and the third is scheduled in September 2024.

Ganymed Robotics is now tracking towards demonstrating its full solution in the operating room setting via a first-in-human study in early Q2 2025.

Why this drug or device is innovative, the broad implications for future research, and/or how it will improve the human condition:

Ganymed Robotics' ambition is to democratize access to high-quality orthopedic care. Its next-generation platform combines advanced computer vision and mechatronics, a new concept in the field.

Computer vision: marker-less technology enabling instant bone registration. Ganymed Robotics has developed software and algorithms to help surgeons instantly determine the position and orientation of bones in space without having to insert percutaneous trackers. Given that registration takes at least 15min with existing technologies, this instantaneous location of bones is a game-changer. It allows surgeons to save a lot of time in the operating room, and thus reduce infection rate. Indeed, the reduction in time lowers the risk of infection, which is the most severe complication associated with TKA.

Mechatronics: a compact design that fits perfectly into any operating room and enhances surgeon comfort. Ganymed Robotics has engineered state-of-the-art robotic arm technology and a unique leg positioner to deliver a space-saving & highly efficient robotic solution. The robot is remarkably compact, and table mounted, simplifying and improving the workflow of orthopedic procedures.

Ganymed Robotics' solution is tailored to the needs of both surgeons and patients in terms of clinical outcomes, surgical & costs efficiency.

Clinical outcomes: the robot is poised to deliver outstanding predictable and reliable clinical outcomes. Predictability is increased thanks to the preoperative image-based (CT scan) planning

. Complication & infection rates are reduced thanks to the absence of percutaneous trackers and faster registration. Real-time monitoring of the blade ensures better soft tissues preservation. Implant placement is pin-point accurate thanks to precise bone cuts that can be adapted to all alignment philosophies (kinematic, mechanical,

etc.)

. Improving patient outcomes and minimize dissatisfaction rate is Ganymed Robotics' primary objective.

Surgical efficiency: Ganymed Robotics improves surgeons' experience and overall efficiency of care delivery. The platform ensures a streamlined surgical procedure thanks to its compact & easily movable design, the absence of line-of-sight issues

(due to the absence of percutaneous optical trackers) and instant bone registration. The efficiency of the surgical team is enhanced by the lower limb positioner that reduces musculoskeletal strain on staff. The need for instrumentation & sterilization is also reduced (less trays to sterilize

and no optical markers & pins).

Revenue & cost efficiency: The first solution to meet surgeons' & care centers' needs in terms of costs. Ganymed Robotics' solution is designed for affordability and is an open platform allowing control over implant selection & pricing. It also allows savings on implant inventory & instruments due to pre-op planning as well as savings on personnel as no extra technicians are required in the operating room. The robot, highly intuitive, enables a fast-learning curve for surgeons.

The trackerless registration technology, initially developed for the knee, holds potential for application in other joints. Ganymed Robotics intends to progressively deploy its technology to several other orthopedics indications, allowing even more patients throughout the world to benefit from high-quality care.

Please provide appropriate references (PubMed, Abstract, Website):

Publication in conference

Title of publication: A benchmark for Deep Learning-based approaches for In-vivo segmentation of 2D images in Total Knee Arthroplasty

Authors: Baptiste Dehaine and Marion Decrouez and Nicolas Loy Rodas

Title of the Journal or equivalent: Proceedings of The 20th Annual Meeting of the International Society for Computer Assisted Orthopaedic Surgery

DOI/ ISBN/ ISSN number: 10.29007/bcs4

Lockable surgical system

Patent number: 11826056

Patent number: 11134960

Abstract: A surgical system including a machining tool aimed at being manually displaced by an operator, a lockable unit including at least two linked and manually displaceable elements aimed at being manually arranged according to a least one

calculated locked configuration, a sensor unit including at least one sensor aimed at following, in real time, a real time configuration of the lockable unit within an anatomical reference system, where the at least two elements of the lockable unit cooperate with lockable element, the lockable element being configured to be activated by a control unit when the real time configuration of the lockable unit corresponds to the at least one locked configuration recorded inside the control unit.

Type: Grant

Assignee: GANYMED ROBOTICS

Inventors: Blaise Bleunven, Cyril Moulin, Sophie Cahen, Nicolas Loy Rodas, Michel Bonnin, Tarik Ait Si Selmi, Marion Decrouez

References File Document upload:

N/A