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IRUBIS GmbH

INVESTMENT-ANALYSIS

16.06.2026

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IRUBIS

Mastering Real-Time Bioprocess Analytics

Investment exposé

IRUBIS GmbH

TU Munich BioTech on course for US Expansion: Millions in savings thanks to patented real-time monitoring in drug manufacturing



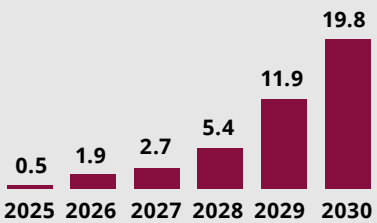
HTGF TUM ventura VERVE VENTURES

Investment conditions

- **Form of participation:** Profit participating certificates
- **Minimum investment amount:** EUR 250
- **Co-Investment:** approx. EUR 350,000 by RoBet KG and Verve.
- **Pre-money valuation:** EUR 14.0 million

Investment highlights

1. **A spin-off from the Technical University of Munich** in PAT for downstream processes and protein-based biopharmaceutical production.
2. Investors such as **HTGF, Verve Ventures, EIC, BioProcess360 (USA)**, etc. on board
3. **Patented single-use flow cell** prevents batch losses amounting to millions and reduces contamination risks
4. **Multi-parameter platform:** MONIPA measures downstream parameters, including proteins, and accelerates time to market
5. **Team with exit experience:** CEO Matthias Eggers scaled m2p-labs with an exit to Beckman Coulter Life Sciences / Danaher.



Expected revenue in EUR million

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IRUBIS GmbH is a Munich-based biotech startup and spin-off of the Technical University of Munich that is developing a novel analytical instrument for biopharmaceutical manufacturing processes. Its current focus is on the purification, concentration, and formulation of proteins such as antibodies and mRNA products. The MONIPA system also measures proteins directly, providing critical quality and concentration data in situations where time-delayed laboratory analyses are still often required today.

For manufacturers, this significantly shortens development and approval timelines: automatable analytics reduce manual sampling, accelerate time to market, and help secure process windows earlier. At the same time, IRUBIS addresses a key economic risk: the loss of entire production batches worth several million euros, which can occur if deviations are detected too late.

Technology and Application

IRUBIS addresses this with MONIPA and the IRUBIS software. MONIPA uses MIR spectroscopy and a patented single-use flow cell to capture relevant measurement values directly within the process – including the concentration of the active ingredient and other components. The software interprets the measurement signals, derives concrete values from them, and not only visualizes them for the user but is also capable of transmitting them to process systems to enable their automation.

Single-use flow cell: The patented single-use flow cell is a key differentiator. It reduces the effort required for cleaning, sterilization, and calibration, minimizes contamination risks, and enables use in production workflows (GMP). This allows critical deviations to be detected earlier, prevents batch losses worth millions, and significantly shortens development and transfer times leading up to market launch.

Team

IRUBIS is led by a complementary management team that combines scientific and technological depth, extensive startup experience, and international commercialization expertise. Among others, the team includes Lorenz Sykora-Mirle, CTO & Co-Founder, who initially conducted research as **a physicist at TUM on the production of cost-effective ATR crystals for infrared spectroscopy** and brings relevant expertise in applied physics, nanotechnology, project management, and technical development. These ATR crystals are now being used at IRUBIS. Matthias Eggers joined the company as CEO in 2025, bringing with him the scaling and internationalization experience crucial for the next phase of growth: Prior to IRUBIS, he led the commercial strategy at m2p-labs, built international sales teams, significantly increased revenue, and, as managing director, oversaw the **acquisition and integration into Beckman Coulter Life Sciences**; he also held leadership roles at Thermo Fisher Scientific, Resistell, and Genepoint in Shanghai. m2p-labs specialized in microreactor and automated screening solutions for screening and bioprocess development, an environment with high strategic proximity to IRUBIS's target market.

Exit

A realistic exit scenario for IRUBIS is a **strategic sale to an established life sciences tools, bioprocessing, or process analytics group**. Potential buyers include, above all, Sartorius / Sartorius Stedim Biotech, Danaher Life Sciences with platforms such as Beckman Coulter Life Sciences, Cytiva, and Pall, Thermo Fisher Scientific, Repligen, Endress+Hauser, Mettler-Toledo, as well as, to a lesser extent, Hamilton, Waters, Agilent, or Bruker. IRUBIS thus addresses precisely the area in which major providers are currently expanding their portfolios: automation, real-time process control, single-use integration, process development, and scaling in biopharmaceutical production.

The status quo in drug manufacturing carries high financial risks

The manufacturing process for active pharmaceutical ingredients and drugs is subject to strict regulations and quality controls. This is the only way to ensure that drugs comply with the approved composition so that, for example, they achieve the desired effect, do not cause unexpected side effects, or even harm the patient. In the manufacturing process, an entire batch of active ingredient is currently often produced, and one or more samples are taken at different times and subsequently tested in the laboratory. These tests take varying amounts of time, ranging from several hours to several days. Accordingly, this established quality assurance process resembles conventional inspections, such as those often found in the food industry, though with often more strictly defined quality standards and smaller permitted deviations. In and of itself, there is nothing wrong with this from the patient's perspective, as the medications are sufficiently safe when the process is carried out conscientiously. For pharmaceutical companies, however, this poses a very high risk, as the respective large batches are very costly to produce and often contain expensive precursors. If such a batch cannot be used due to contamination or insufficient concentrations of active ingredients, the company loses millions in revenue. This risk can be significantly reduced through IRUBIS's continuous testing process.

The prospect of such significant financial losses explains why pharmaceutical companies are willing to pay a premium to avoid defective batches. Especially when it comes to particularly valuable products, many pharmaceutical companies therefore rely on highly sophisticated tests that can provide initial quality indicators even while manufacturing processes are still underway. Based on years of research in collaboration with the Technical University of Munich, the founders of IRUBIS have succeeded in developing and patenting a method that allows the active ingredients produced in chemical manufacturing processes to be continuously monitored directly on the production line. With IRUBIS, pharmaceutical companies can continuously monitor the manufacturing process at multiple points and react immediately to any deviations. In the best-case scenario, this completely prevents defective batches. In the worst-case scenario, isolated errors may still occur, but they are detected immediately. Manufacturers can react in real time based on this information. As a result, the entire valuable batch is no longer at risk.

Pharmaceutical companies invest many millions of euros in the development of new drugs. Development and approval often take more than 10 years, and the time from patent grant to the emergence of the first generic manufacturers is correspondingly short. Any shortening of this timeframe costs research-based pharmaceutical companies a great deal of money. The process development for manufacturing the drugs also requires extensive measurement series. Conventional manual analysis can take days or weeks per measurement before results are available. Here, too, IRUBIS can save months of development time through in-process measurements and enable pharmaceutical companies to generate many millions in additional profits by marketing their products without generic competitors.

Product & Technology



IRUBIS's production-ready product is called Monipa. Monipa is a process analysis system for real-time monitoring of biopharmaceutical processes. At its core, the system measures absorption spectra in the mid-infrared range and leverages the fact that certain molecules absorb energy only at characteristic wavenumbers. This allows changes in concentration within process streams to be detected and quantified. The application is intended for bioprocess steps in both upstream and downstream stages; this means that both the input chemicals and precursors can be continuously monitored, as well as the finished (intermediate) product immediately after production. Monipa can be used via a bypass or loop, inline directly in the process stream, or at-line alongside the process. This technical flexibility is a key element of the product strategy, as biopharma customers have different integration preferences depending on the process phase, scale, and regulatory environment. For customers, these flexible application areas are particularly relevant because Monipa is not a classic laboratory instrument that stands isolated from the process— —but is technically designed for integration into automation environments.

Monipa's technical functionality can be simplified as a three-layer system: process interface, spectroscopy engine, and analytical software:

- The process interface is the flow cell with an ATR crystal; it determines how easily and with minimal contamination the sensor can be integrated into bioprocesses.
- The spectroscopy engine generates robust raw data in the mid-infrared range.
- The software translates this raw data into usable process information.

The silicon ATR chip developed by IRUBIS enables the reflection of infrared light at the interface with the process fluid. Molecules absorb specifically within the evanescent wave. The resulting spectrum thus forms a chemical fingerprint. The flow cells are designed as interchangeable or autoclavable process interfaces. They are offered as single-use flow cells for various applications. Various diameters and connector types are available, as well as standard and bubble-trap variants and an at-line cell for small volumes. Additionally, an autosampler add-on is planned, which will enable automated sample handling in the future. The materials used in the flow cells are biocompatible. Depending on the variant, autoclaving and gamma sterilization are possible. Strategically, this consumables approach is doubly relevant: from the customer's perspective, it reduces the risk of cross-contamination and the effort required for cleaning validation. For IRUBIS, it generates recurring revenue that goes beyond mere equipment sales.

In the bioprocessing industry, this feature is particularly valuable because process streams contain complex mixtures of proteins, buffer substances, sugars, salts, amino acids, and other components. A technology capable of addressing multiple chemical classes simultaneously—or at least within the same measurement environment—has a structural advantage over single-parameter sensors. The difficulty lies in increased water absorption, greater optical complexity, data complexity, and the need to maintain a highly stable measurement environment. IRUBIS specifically addresses these challenges: compact sealed optics, temperature-compensated correction, single-use flow cell, internal referencing, software-based data quality control, and interfaces to automation environments.

The intuitive software is another key component. The user interface allows for start, stop, tracking, visualization of concentration data, spectra, system status, components, and reference spectra, as well as data export. Equally important is the reduction of traditional calibration effort and data complexity. Many spectroscopic solutions fail in everyday biopharma practice not because of the physics, but because of the need to build and transfer robust chemometric models for every medium, every process, and every device. IRUBIS therefore positions Monipa as a solution closer to plug-and-play. This combination results in a system where hardware design, flow cell geometry, reference spectra, data processing, user guidance, and process knowledge work together. The fundamental vibrations of many functional groups lie in the mid-infrared range, which is why chemical specificity is higher than with many NIR approaches.

For customers, Monipa offers several key advantages over established quality assurance processes: First, real-time monitoring reduces wait times because results are generated immediately, rather than after sampling, transport, and laboratory analysis. Second, it improves process understanding by providing trend curves of concentration and buffer exchange rather than individual snapshots. Third, it can enable long-term process control when measured values are integrated into automatic feeding, filtration, or endpoint decisions. The third point is the most valuable, but also the part of the story most dependent on validation and regulatory approval.

The Monipa hardware is also very compact, measuring approximately 14 x 26 x 30 cm and weighing 6.6 kg. It utilizes a 2–12 µm spectral range, a cooled MCT detector, an adjustable measurement rate down to 0.2 seconds, and Ethernet, USB, and HDMI connections. On the software side, it includes a RESTful API, OPC UA and IRUBIS frontend, data export in formats such as CSV, SPC, and HDF5, as well as a browser-based user interface.

The initial work dates back to 2014 at the Technical University of Munich and the Technical University of Denmark. IRUBIS was founded in 2017, and in 2018–2019, the technology's suitability for bioreactor and bioprocess monitoring was evaluated using initial prototypes and pilot measurements. Between 2020 and 2022, the Monipa generation for parallel upstream monitoring was developed and CE-certified as part of an EIC/H2020 project. In the downstream sector, the publicly available AGC Biologics case study provides external validation that is valuable in the PAT industry. AGC describes the use of Monipa as a MIR-based PAT system in UF/DF processes, particularly for real-time monitoring of a therapeutic protein and excipients such as trehalose. In this example, protein concentration and excipient trends were monitored inline. AGC reports an error

deviation of up to 5% compared to a SoloVPE reference method for protein, as well as approximately +1% accuracy in trehalose monitoring relative to the known concentration.

Market & Competition

Market

The overall market for process analytical technology (PAT) solutions is sufficiently large and is expected to continue to perform well in the coming years, according to various sources. For example, Grand View Research estimates the global PAT market at USD 7.53 billion in 2023 and USD 10.91 billion by 2030.[1] Even more interesting, however, is the segment of the global biopharmaceutical PAT market that IRUBIS directly addresses. Research And Markets describes the biopharmaceutical PAT market as a growing market, projected to grow from USD 1.98 billion in 2024 to USD 2.18 billion in 2025 and USD 3.49 billion by 2030, corresponding to a CAGR of approximately 9.8%.[2] IRUBIS's internal documents define a focused target market relevant to Monipa of approximately USD 1.1 billion across selected applications such as UF/DF mAb, pDNA, chromatography, and IVT/UF/DF mRNA.

The target market is thus already sufficiently large and is expected to continue growing over the coming years. Furthermore, current standard solutions and testing procedures are characterized by significant inefficiencies and pose high risks of damage to drug manufacturers. Accordingly, in addition to the growing market, IRUBIS can also target a significant share of the existing market, provided that the described advantages of its Monipa product are further verified in practice and accepted by customers. This is also demonstrated by the regulatory and technical tailwind for PAT. For example, the U.S. Food and Drug Administration (FDA) describes process technologies as a framework intended to promote innovative development, manufacturing, and quality assurance. The basic principle is to measure critical process parameters and critical quality attributes in a timely manner—preferably in-line or on-line—to better understand and control processes. In the biopharmaceutical industry, this aligns with Quality-by-Design, continuous process verification, digital production, and real-time release ambitions. The market is thus driven not only by efficiency considerations but also by regulatory logic: quality should not be "tested in" at the end, but continuously ensured through process understanding and control.

The barriers to market entry are high, but not insurmountable. Biopharma customers are conservative, as process changes can have regulatory consequences. In process development, the requirements are lower and the willingness to pilot is higher. That is why starting in process development makes sense: devices can be used there for process characterization, method development, and support in upstream and downstream without immediately having to make production-critical decisions. However, the path to manufacturing and production applications is strategically essential, because it is only there that economies of scale, higher price levels, service contracts, OEM integration, and exit relevance arise. Corporate planning addresses this with ISO 9001/GMP readiness goals and long-term price and service differentiation between development and GMP use.

Competition

The competition is multifaceted and should not be defined too narrowly in terms of the specific operational mechanisms of the testing technologies. The most important alternative remains offline analysis, i.e., the comprehensive testing of intermediate and final products at the end of the respective manufacturing process or the testing of raw materials upon delivery. These processes are well-established, regulatory-compliant, and methodologically reliable, but they are slow and labor-intensive.

In terms of instrumental competition, options include Raman spectroscopy, UV/UV-Vis inline systems, NIR systems, QCL-IR systems, as well as refractive and chromatographic approaches. Some examples:

- **Repligen,** for example, integrates FlowVPX UV-Vis inline spectrophotometry into KrosFlo TFF systems and positions this as real-time process management with closed-loop capabilities.
- **Endress+Hauser** offers Raman-Rxn systems for process development, in-situ analysis, and biopharmaceutical PAT/QbD applications.

[1] https://www.grandviewresearch.com/industry-analysis/process-analytical-technology-market-report
[2] https://www.researchandmarkets.com/report/global-biopharmaceutical-process-analytical-technology-market?srsltid=AfmBOoppGzlzY2fGA-lOEZYNfHmKMJ1Ptjdw7aBl7t-52l4qJPxGWoJe5

- **Nirrin** positions ATLAS as an NIR-based multi-component platform for protein and excipient measurement, from formulation to process integration.

This competitive landscape has two consequences. First, the market is real and is taken seriously by major strategic players. This is positive for exit options but negative for defensibility if IRUBIS does not build up customer proofs and integrations quickly enough. Likewise, IRUBIS improves the defensibility of its own technology through its own patents. Second, IRUBIS must precisely define its specific advantage. Compared to Raman, IRUBIS can offer more direct and specific absorption of many functional groups, whereas Raman often has high calibration and model transfer requirements. Compared to UV-Vis, IRUBIS is not necessarily superior for pure protein measurement, but could be significantly more attractive when measuring additional factors such as excipients, sugars, amino acids, or nucleic acids simultaneously. Compared to other infrared-based methods, IRUBIS must demonstrate that it offers higher chemical specificity and robustness in aqueous, complex bioprocess matrices. Furthermore, the single-use approach can provide a decisive advantage, as while it increases direct operating costs, it simultaneously saves a significant amount of time, greatly simplifies operation, and prevents unwanted contamination. The latter is particularly crucial for inline use, as the substances that have flowed through the Monipa are directly reused.

The advantages of the IRUBIS Monipa should therefore be considered as a whole:

- Real-time data instead of lab results delayed by days or even weeks
- Highly precise, sensitive, and reliable measurement data
- No need for complex calibration by trained personnel, which significantly improves usability while simultaneously avoiding sources of error due to incorrect calibration
- Minimization of the risks of cross-contamination while eliminating the need for cleaning and sterilization validations thanks to the easily replaceable disposable flow cell
- Can be easily integrated into existing environments due to the device's small size and various connection options
- Easy interpretation of data thanks to the accompanying software

Sales, Business Model & Financial Planning

IRUBIS pursues a multi-pronged strategy for sales. IRUBIS serves the European and U.S. markets directly through its own sales channels. To this end, a small dedicated sales team has already been established for the EU. For U.S. sales, a separate subsidiary is expected to be founded in 2026, within which a dedicated sales team and other necessary structures will be established. IRUBIS also plans to expand into the APAC and Indian markets in 2026. However, sales in these regions will be conducted indirectly through distribution partnerships. To this end, IRUBIS is currently in negotiations with potential distribution partners and has already signed distribution agreements in Japan, China, and India.

One of the most important sales channels in IRUBIS's direct sales strategy is targeted outreach to customers at select industry events, such as trade shows, presentations to existing customers, and specialized conferences. In addition, IRUBIS specifically targets its target customers and has developed an inbound marketing strategy that reaches potential customers through, for example, valuable contributions to professional literature, trade journals, and LinkedIn. In its direct sales efforts, IRUBIS also initially focuses on a narrowly defined target group: large biopharmaceutical companies, academic institutions, and CDMOs (contract development and manufacturing organizations serving the pharmaceutical and biotech industries). In doing so, IRUBIS strategically prioritizes customers in regions with particularly high potential in order to use them as a lever for reaching out to additional potential customers in the immediate vicinity. This specific focus on selected customers with particularly high potential allows IRUBIS to concentrate its sales activities on especially promising customers and keep the associated costs as low as possible. Furthermore, the very close collaboration with its customers aids in the ongoing optimization of its own system as well as in expanding the areas of application directly based on customer demand from the market.

IRUBIS's business model is also built on several pillars: First, revenue from the direct sale of Monipa hardware at a one-time purchase price of up to 100,000 EUR. Second, recurring revenue from the sale of consumables, expanded software features, and service and maintenance contracts. Consumables include, in particular, the so-called flow cells, which are designed for single-use and must therefore be replaced regularly, at the latest with each change of the substances being tested. IRUBIS

estimates that customers will need at least 20 of these flow cells per year, which corresponds to annual recurring revenue of approximately EUR 8,000 per Monipa in the field. For the extended software environment, IRUBIS estimates up to EUR 10,000 per year, depending on the application and scope of functions. Service and maintenance contracts are currently agreed upon individually based on customer needs. For use in GMP-regulated quality assurance processes in direct drug production (the relevant ISO certification is already in place), IRUBIS plans to deviate from the aforementioned cost structure and agree on partially customized pricing, as these customers face particularly high pressure and are therefore particularly willing to pay.

In thousands of EUR	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Number of Monipa sold	*5*	*9*	*22*	*37*	*58*	*70*
Revenue	**485.5**	**1,876.5**	**2,731.9**	**5,411.5**	**11,874.3**	**19,832.0**
COGS	- 286.8	- 447.7	- 638.9	- 1,219.5	-3,371.7	-5,879.8
Gross profit	**198.7**	**1,428.8**	**2,093.0**	**4,192.0**	**8,502.6**	**13,952.2**
Personnel expenses	- 1,226.1	- 1,817.9	- 2,393.6	- 2,792.2	-3,345.4	-4,306.0
R&D	- 43.2	- 209.1	- 101.2	- 50.5	-51.5	-52.5
Office	- 145.4	- 158.4	- 182.7	- 191.8	-201.4	-423.0
Marketing	- 40.9	- 84.6	- 127.5	- 166.5	-225.3	-334.4
U.S. subsidiary	/	- 200.8	- 551.1	- 1,301.2	-2,483.0	-3,277.5
Other expenses	- 335.2	- 572.9	- 486.8	- 637.0	-742.2	-1,053.8
EBITDA	**- 1,592.1**	**- 1,614.9**	**- 1,749.9**	**- 947.2**	**1,453.7**	**4,505.0**

The financial plan above shows that IRUBIS sold five new Monipa units to its pilot customers in 2025. These were a major driver of revenue in 2025, as the associated recurring revenue streams, such as software and consumables, do not yet account for a significant portion of the total. With each new Monipa sold, IRUBIS generates approximately 75,000 to 100,000 EUR in revenue. According to the plan, this price range will increase slightly in the coming years, but the additional recurring revenue will account for an increasingly larger share. In 2030, IRUBIS plans for Monipa sales to account for about two-thirds of revenue, with the remaining revenue coming largely from consumables, software, services, and apps. In addition, IRUBIS plans to expand its product portfolio in 2029 with a new product that does not yet have an official name, and information regarding the planned product is being kept strictly confidential. The projected unit sales for the new product are 16 in 2029 and 36 in 2030. In addition, a one-time revenue contribution of approximately EUR 750,000 is planned for the current year 2026 from an external project, which will significantly strengthen IRUBIS's liquidity in the current year despite a modest number of planned new Monipa sales. As of now, 20 Monipa units are already in use by customers.

On the expense side, a closer look at COGS reveals that IRUBIS is already planning for a very promising gross profit margin of approximately 75% in the current year, which is expected to rise fairly steadily in line with revenue figures in subsequent years. Meanwhile, the manufacturing costs for the Monipa units themselves are projected to remain nearly constant at just over 30,000 EUR per unit. The primary reason for the constant gross profit margin is that, given the planned unit volumes in the coming years, only very minor positive economies of scale can be expected at most. Nevertheless, the recurring sale of consumables in particular offers further optimization potential beyond the current plan. Personnel expenses, which include the company's own production team, represent the largest cost category over the planning period. Accordingly, the runway can be continuously adjusted to actual revenue trends; for example, if scaling proceeds more slowly, planned new hires could be reduced accordingly. Office-related costs are also rising at a very moderate rate, as the current premises will largely suffice for growth in the coming years. A substantial expansion is not planned until 2030. Also notable are the marketing expenses, which remain consistently low relative to revenue, as this industry typically does not require large advertising campaigns or similar initiatives. Equally notable are the low planned costs for research and development (R&D). This is due, on the one hand, to the fact that the most important development steps have already been completed and the

product has been developed to market readiness. The remaining R&D costs will therefore be used primarily for optimizations and the development of the planned second product (launch scheduled for 2029). Secondly, personnel costs also include expenses for the company's own development staff, currently about one-third of personnel costs and, in the long term, about one-fifth of personnel costs. By maintaining its own development team, IRUBIS ensures that the relevant know-how remains directly within the company. Another cost category set to grow in the future is the expenses for the planned U.S. subsidiary, which is to be established in the course of increasing sales and distribution efforts in the U.S. market, likely still in the current year 2026. Other costs primarily include patent and legal fees, travel budgets, consulting and accounting expenses, as well as software subscriptions.

In its overall planning, IRUBIS anticipates steady growth in the coming years, both on the revenue and expense sides. The operating result will remain in negative territory for the time being; IRUBIS expects a funding gap of approximately EUR 1.7 million in both the current and coming year, which is to be closed, among other things, with the currently ongoing financing round. Starting in Q4 2028, the quarterly projections are expected to turn significantly positive for the first time, resulting in an estimated deficit of less than EUR 1 million for the full year 2028. Starting in 2029, IRUBIS plans to achieve consistently positive annual results and long-term EBITDA margins of around 20%, with further optimization potential beyond that, particularly due to recurring revenue and potential positive economies of scale as the company scales beyond 2030.

Team & Shareholders

IRUBIS was co-founded in 2017 by Alexander Geißler and Lorenz Sykora-Mirle and emerged from the Technical University of Munich (TU München) community. Matthias Eggers joined the company as CEO in mid-2025. With over 35 years of professional experience, this seasoned business executive has held leadership roles including Product Manager, served as Sales Director at the world's largest U.S. laboratory equipment manufacturers Thermo Fisher Scientific and Danaher, and acted as Business Director at Transitions Optical. In addition, in 2015 he joined the RWTH spin-off m2p-labs, which had been founded a few years earlier, where, as Managing Director over the next five years, he played a crucial role in the company's further development leading up to its successful exit. The first co-founder, Lorenz Sykora-Mirle, studied physics at the Technical University of Munich and the Technical University of Denmark, earning his Master of Science with a focus on infrared spectroscopy and semiconductor manufacturing. In addition, prior to joining IRUBIS, he worked as a developer at LEA Medizintechnik, a Giessen-based company specializing in the development, production, and distribution of medical measurement and diagnostic systems. Consequently, Lorenz is primarily responsible for technical development at IRUBIS. The second co-founder, Alexander Geißler, serves as CCO and is primarily responsible for customer relations and sales. In this role, Alexander, who holds a degree in business administration, draws on both his practical experience from his work in business development at EXTEND3D and his business studies at the Technical University of Munich, where he focused on corporate finance, technology and innovation management, and mechanical engineering. Both have been on board since IRUBIS was founded in 2017 and, prior to the spin-off, laid the technological groundwork together at the Technical University of Munich.

The founding team is also supported by approximately 15 employees. Additionally, several investors are actively involved in a specially established advisory board. In addition to founder Lorenz Sykora-Mirle, the board currently includes Dr. Christoph Bremus (representative of the EIC), Dr. Ing. Karl Rix (representative of the HTGF), Ventura BioMed, EIC Fund, and Verve Ventures.

Shareholder Structure

Shareholder structure following the financing round[3]	Ownership stake
Lorenz Sykora-Mirle (CTO and Co-Founder)	15.98%
Alexander Geißler (CCO and Co-Founder)	13.52%
Anja Müller (Advisory Co-Founder)	8.19%

[3] The final shareholder structure will not be determined until the financing round is completed. The shares calculated here are based on a preliminary financing target.

Employee Stock Ownership Plan	3.28%
UnternehmerTUM (Startup Center at the Technical University of Munich)	0.31%
EIC (EU funding agency)	7.38%
Ventura BioMed (biomedical investor from Munich)	7.16%
HTGF (High-Tech Gründerfonds)	6.3%
Verve Ventures (European deep-tech VC)	5.16%
BioProcess360 (US biotechnology investor)	8.7%
Experienced business angels and advisors (including Dr. Karl Rix, Dr. Matthias Arnold, and Dr. Ulrich Schriek)	15.74%
Companisto (AC + IC)	**8.26%**

Exit Options & Valuation

A potential valuation logic for the exit will likely not be based solely on current revenue. For such assets, strategic buyers often evaluate the combination of IP, product maturity, installed base, integration capability, customer references, team, and strategic gaps in their own portfolio. Accordingly, IRUBIS must focus in the coming years on expanding the number of installed systems and strengthening sales partnerships and customer numbers to position itself as an attractive acquisition target for potential exit partners.

The pool of strategic buyers is broad because Monipa interfaces with multiple value chains: TFF/filtration systems, downstream processing skids, PAT portfolios, spectroscopic instruments, single-use components, process automation, and biomanufacturing software. The most likely exit strategy for IRUBIS is a strategic sale to a provider of life science tools, bioprocess equipment, or analytical instrumentation. Potential buyers primarily include Sartorius / Sartorius Stedim Biotech, Danaher Life Sciences with platforms such as Beckman Coulter Life Sciences, Cytiva, and Pall, Thermo Fisher Scientific, Repligen, Endress+Hauser, Mettler-Toledo, as well as, to a lesser extent, Hamilton, Waters, Agilent, or Bruker. Some of the companies mentioned already offer established quality assurance solutions; see also the section on the competitive landscape and the status quo in quality assurance. With an acquisition of IRUBIS, they could skillfully expand their existing product portfolio, build directly on the existing sales and customer base, and simultaneously benefit from access to the IRUBIS customer network. Repligen, for example, is an obvious reference case here, as the company already offers PAT-driven TFF automation with FlowVPX and RPM systems and has additionally integrated QCL-IR technology into its portfolio through the Daylight partnership. Danaher Life Sciences / Beckman Coulter Life Sciences is also particularly noteworthy, as they have already acquired the startup m2p-labs, which at the time was also led by current IRUBIS CEO Matthias Eggers. M2p-labs specialized in microreactor and automated screening solutions for screening and bioprocess development—an area with high strategic proximity to IRUBIS's target market.

Regarding the valuation, we incorporated all findings from our due diligence, which we have also summarized in this investment analysis as well as the SWOT analysis. Positive factors included, for example, the significant existing pain point for customers due to the currently high yet insufficient quality assurance measures, as these are either very costly or continue to jeopardize the often highly valuable batches, resulting in potential losses in the millions. The advanced stage of research and development, including the spin-off from the Technical University of Munich, and the experienced investors among the existing shareholders also had a positive impact. The broad exit opportunities, coupled with CEO Matthias Eggers' exit experience in a closely related industry, the Monipa product—which is ready for mass production and already available on the international market—as well as the significant recurring revenue generated by the single-use concept and the associated follow-up orders for consumables, have also had a positive impact on the valuation. However, existing risks—such as the still modest installed base of Monipa units (currently 20) and the strong market power of established players—must also be factored into the valuation. The same applies to the currently high manufacturing costs, which are expected to decrease only with a significant increase in sales volume, and the still low existing revenue, which is not yet sufficient to cover the company's operating costs. The resulting pre-money company valuation is €14.0 million. The resulting potential return is approximately 52% per year and 439% total, assuming an exit in about 4 years.

"The target return is calculated by our experts in the venture capital sector. This is a target return, not an expected or guaranteed return. It is based on our current assessments, assumptions, and market observations. Despite an intensive and careful preliminary review by experts, the financing opportunity is nevertheless associated with risk and may result in a total loss."

SWOT Analysis

In the SWOT analysis, we have documented the team's responses to the weaknesses and risks that we consider plausible.

Strengths

- Significant technological differentiation from the status quo and from competitors
- Flexible application: Compact, can be used inline/at-line, can be used upstream/downstream
- Strong founding and management team, supported by a highly experienced group of investors and advisors
- The ATR flow cell, as a single-use concept, represents a clear differentiating feature
- IRUBIS does not merely sell a single measuring device, but combines sensor technology, mid-IR spectroscopy, single-use flow cells, and analysis software. This system expertise is strategically strong because customer value stems not only from measurement data but also from actionable process information.

Weaknesses

- IRUBIS is in an early commercialization phase with long sales cycles
- Installed base is not yet sole proof of scalable customer demand
- Production capacities are still more at the artisanal level than at the mass-production level
- A product that requires explanation and challenges long-established processes
- A manageable number of reliable reference customers

Opportunities

- The combination of hardware, consumables, software, and service enables an attractive business model with recurring revenue streams
- High value and significant willingness to pay among target customers due to high financial risks associated with current quality assurance processes
- A growing, highly strategic market
- Possibility of integration into comprehensive TFF systems from market-leading manufacturers such as Sartorius, Cytiva, or Merck OEM business
- Addresses the trend toward automation and digitalization
- Compelling solution for the growing need for real-time process control in biopharma
- Once IRUBIS is established as an automated standard solution, long-term, secure revenue is highly likely

Risks

- Unresolved scaling issues, particularly regarding actual customer demand versus actual service costs
- The high value of individual batches could also deter drug manufacturers from relying directly on Monipa
- Regulatory processes and delays could slow down adoption in practice and thus hinder scaling
- Risk of being perceived for an extended period as a niche solution with pilot projects and customer-specific development/support

IRUBIS' response to the weaknesses and risks:

The weaknesses and risks mentioned are understandable for a young deep-tech company in a regulated biopharma market, but we view them more as typical scaling challenges rather than structural disadvantages. IRUBIS can significantly mitigate these risks through clear validation data, strong reference customers, partnerships with bioprocessing players, and focused commercialization. Precisely because the market is conservative, a robust, easily integrable PAT solution with measurable customer benefits can build a strong competitive advantage in the long term.