

Press Release

**Innosuisse grant for Bon3OID™-MSP project**

## **Swiss researchers aim to develop a platform for 3D In-Vitro Bone Models Enabling Early Detection of Bone Metastasis**

**Zurich, 17 December 2024**

**Swiss researchers want to develop the world's first semi-automated machine for producing biomechanically loaded in vitro bone models to detect bone metastases from blood samples. The Bon3OID™-MSP project, a collaboration between life science start-up CompagOs AG, Swiss technology innovation center CSEM, and the University of Fribourg (UniFr), has been approved by Innosuisse. The total project costs exceed CHF 750'000.**

Bone metastasis is a critical complication in many cancers. Patients with bone metastases are incurable and face debilitating complications such as fractures. To prevent these issues and related costs, they must be diagnosed earlier and more accurately than with clinical imaging methods, which only capture the visible damage caused by metastasis. CompagOs' in vitro bone models, Bon3OID™, can be used as functional assays to provide information earlier by measuring the underlying biological propensity of patients' cells to cause bone metastasis. With over 2 million new patients diagnosed with bone metastases globally each year, there is a growing need for such an assay. To meet this demand, CompagOs partnered with CSEM and UniFr to scale up the mechanical stimulation and 3D bioprinting processes involved in producing the Bon3OID™ in vitro models.

The global cancer market, valued at over CHF 200 billion, offers immense opportunities. In addition to the Bon3OID™ technology, there is considerable potential in other areas of bone health. With a lack of diagnostic tools for the early detection of osteoporosis and rheumatoid arthritis, the market is ripe for expansion, opening new application areas.

### **3D bioprinting in vitro bone models**

The technology behind Bon3OID™ in vitro models results from over 10 years of research, including 10 publications, 4 PhD theses, and a grant from Personalized and Related Technologies. These models are created through cyclic mechanical loading of 3D bioprinted human mesenchymal stem cell-laden hydrogels.

CompagOs' project application has been approved by Innosuisse to help automate the production process. The 24-month project will help develop a platform with the potential to make a significant impact on both cancer patients and the healthcare system. *"We are excited*

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*and proud to receive support from Innosuisse. This supports expedites translation of our innovation to a market with unmet clinical need",* said Gian Nutal Schädli, CEO of CompagOs.

CompagOs' 3D models are unique, incorporating multiple cell types within a dynamic environment. CSEM is the ideal partner to scale up production, thanks to its past contributions to the industrialization of cutting-edge in vitro model solutions. *"To reduce batch-to-batch variability and meet the growing demand, process automation and standardization is crucial. We are confident that we can help CompagOs automate production to meet the regulatory and quality standards required for clinical solutions",* said Gilles Weder, Head Research & BD Life Sciences at CSEM.

The project also aims to validate the models in a clinical environment. The Laboratory of Applied Cancer Research (LACR) at UniFr has the expertise in advanced blood analysis and samples will be collected from patients with cancer treated at the Hospital of Fribourg (HFR). First experiments will focus on samples from patients with non-small-cell lung cancer (NSCLC), which leads to bone metastasis particularly quickly and with high probability. *"There is a significant unmet need within this patient group, as bone metastases might become visible at later stage and specific treatments could improve patients' outcome, if given on time. We are excited to support this project and contribute to developing solutions for these patients",* said Prof. Alessandra Curioni, Head of Oncology at HFR and Chair of Oncology at UniFr. Future expansions to other indications, such as breast, prostate and renal, are possible as these cancers also frequently spread to bones.

### Preparing for the market

The outcome of the project will be a semi-automated, standardized process that increases production capacity. CompagOs plans to use this scaled system to conduct a clinical study, aiming to gather the data needed for market entry.

Founded in 2023, CompagOs AG has a team of seven people, won Venturekick Stage 3 and received further support from Kickfund. As an ETH spin-off, the company is part of an ecosystem that has been home to several successful technology companies.

More information: [www.compagos.ch](http://www.compagos.ch)



Bon30ID™ model (gray) attached to a bioreactor substrate, in a petri dish with cell culture medium (pink).

## About CSEM – Advancing life sciences with impactful solutions

CSEM is a non-profit-oriented public-private Swiss technology innovation center renowned for developing advanced technologies with profound societal impact. Our mission is to transfer these innovations to industries, strengthening the economy. We are at the forefront of life sciences, combining engineering skills, biological understanding, and cutting infrastructure to revolutionize the field. By bridging precision manufacturing and digitalization, we develop disruptive biosystems that bring the lab to the patient and vice versa. From our advanced biosafety level 2 labs, we leverage cutting-edge technologies like cell microsystems, biomonitoring, lab automation, and AI to create impactful solutions. Our work narrows the gap between applied sciences and industrialization, enabling standardization and advancements for personalized medicine, diagnostics, and advancements in regenerative medicine. CSEM's tools for life sciences innovation are unlocking new possibilities in healthcare.

<https://www.csem.ch/en/technical-focus/tools-for-life-sciences>

## About UniFr and HFR

The University of Fribourg is renowned for its interdisciplinary approach and strong emphasis on research and innovation. Its Section of Medicine, part of the Faculty of Science and Medicine, offers programs in human medicine, biomedical sciences, and experimental biomedical research. The Master's program in human medicine, introduced in 2019, combines rigorous theoretical training with practical, patient-centered learning. Key areas of focus include family medicine, social responsibility, and needs-based, population-oriented healthcare.

The Hospital of Fribourg (freiburger spital – HFR) is a leading public institution for advanced medical care in the canton, equipped with state-of-the-art infrastructure. The hospital is renowned for its multidisciplinary approach, offering comprehensive oncology services that include advanced diagnostic tools, personalized treatment plans, and cutting-edge therapies. With its specialized cancer care unit, the hospital provides inpatient and outpatient oncology treatments, palliative care, and access to clinical trials. Additionally, its 24/7 emergency department and collaboration with various medical specialties ensure holistic care for oncology patients.

The close collaboration between HFR and UniFr has allowed to build a database of patient samples, which has shown to be of great value in several projects. The Innosuisse project with CompagOs is the latest of these.

<https://www.h-fr.ch/> - [www.lacr.ch](http://www.lacr.ch)

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