HUB ORGANOIDS

HUB Tumor Organoids for oncology drug development

Capture the complexity of cancer and predict patient response in the clinic

FACT SHEET

version 1.1

THE CHALLENGE

Advances in our understanding of the molecular basis of cancer have led to explosive growth in the number of oncology drug candidates in development. Despite robust indications of activity in existing preclinical models, such as cell lines and animal models, around 95% of new anticancer drugs fail to reach patients. The high attrition rate in cancer drug development has been attributed to poor translatability of preclinical models. Therefore, it has become clear that advanced preclinical models – directly derived from patient tissue and easily expandable in the lab – are needed to improve drug discovery and development.

OUR SOLUTION

HUB Organoids™ can be developed directly from patient biopsies or resections with very high efficiency thanks to our technology, which has enabled us to generate a genetically stable, heterogeneous, and patient-relevant biobank from virtually all carcinomas. In addition, HUB Organoids can be generated from both normal and malignant patient tissue, thus providing a unique system to evaluate both antitumor efficacy and off-target toxicities. Using HUB´s drug screening platform and unique models that represents the diverse mutational landscape present in cancer patients, clinically-relevant data can be generated that allow you to identify new targets, refine your drug combination strategies, or stratify your patient population with confidence.

WHY HUB ORGANOIDS™

HUB Tumor Organoids are "mini-tumors in a dish" that can be established with high success rates starting from patient material. HUB Organoids revolutionize drug development workflows by:

- Offering patient and disease relevance. HUB Organoids preserve original tumor pathophysiology, including patient-specific oncogenic mutations
- Recapitulating the heterogeneity of the patient population to identify biomarker of response in large scale screenings
- Accelerating and de-risking drug development thanks to an accurate prediction of patient response in the clinic

WHAT CAN WE OFFER

HUB is the leading expert in patient-derived organoid technology. By working with HUB you can ensure to integrate organoids in your drug development program swiftly and efficiently.

In addition to licensing our technology for in-house application, HUB can offer contract research services such as:

- Custom model and assay development
- Drug screening through our "clinical trials in a dish" platform
- Co-clinical development to inform on personalized approaches

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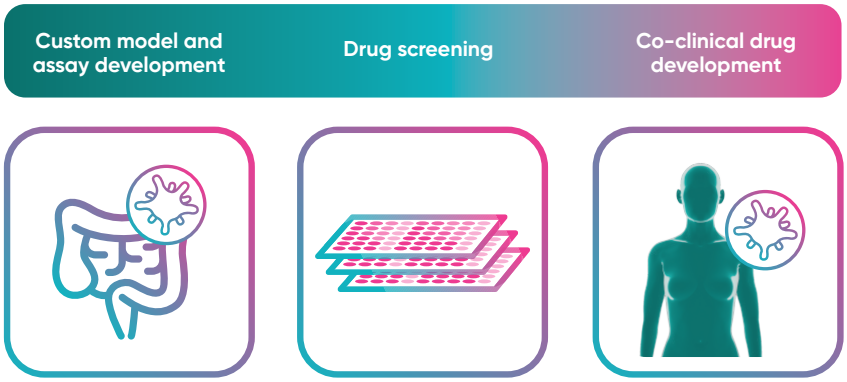
Figure 1. HUB Organoids contract research services



HUB DRUG SCREENING SERVICES: FAST-TRACK YOUR TEST COMPOUNDS WITH THE ONLY PATIENT-RELEVANT *CLINICAL TRIALS IN A DISH* PLATFORM

HUB Tumor Organoids are one-of-a-kind models that can be developed from a vast range of different carcinoma, allowing to reduce animal usage, accelerate drug development timelines, and optimize patient selections in clinical trials.

Thanks to preserving parental tumor features they can be used as patient "avatars" in the lab for drug screening - or *clinical trials in a dish* - bridging the gap between the lab and the clinic and effectively bringing every "*patient in the lab®*". This has contributed to reducing the high attrition rate of new drugs and to making personalized medicine a reality[1].

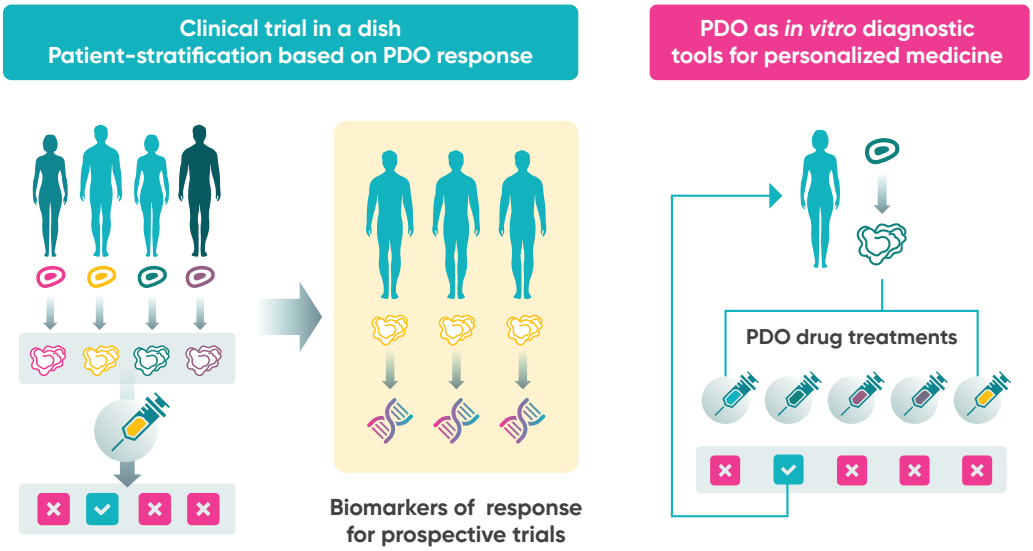
HUB Organoids have already been used to test drug efficacy and toxicity and stratify patient populations based on *in vitro* sensitivity data[2,3].

Key HUB Tumor Organoids applications in oncology drug development include:

- Assessing drug efficacy across a broad number of organs to identify your target patient population
- Discovering a new target patient population
- Probing mechanisms of action
- Testing combination strategies
- Identifying biomarkers of response or non-response
- Testing off-target toxicity on healthy organoids

Work with the leading expert in organoid technology to swiftly integrate organoids in your drug development program

Figure 2. HUB Organoids as tools for drug screening and personalized medicine



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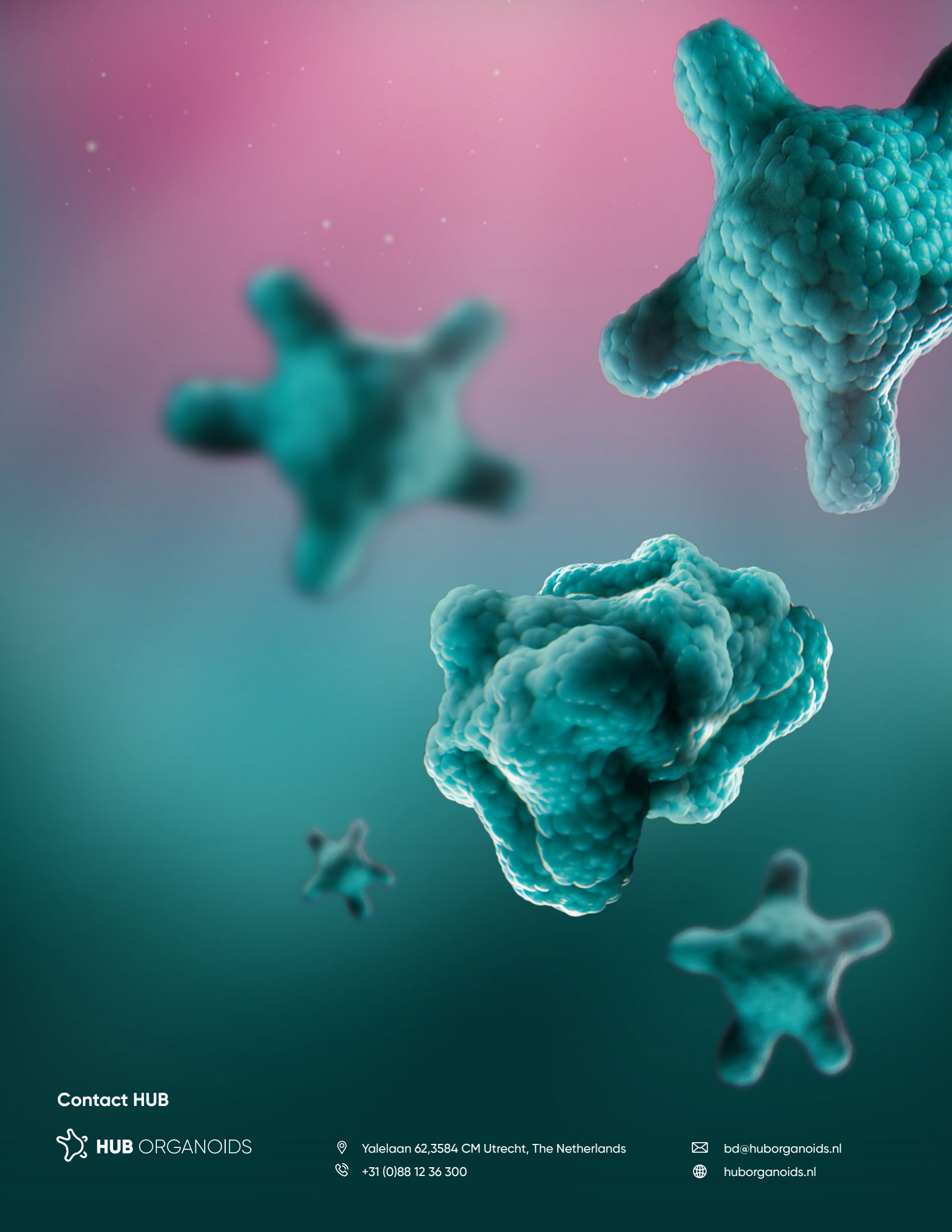
2 Sachs *et al.*, A living biobank of breast cancer organoids capture disease heterogeneity. *Cell* 2018, 172:373-386

3 Driehuis *et al.*, Pancreatic cancer organoids recapitulate disease and allow personalized medicine drug screening. *PNAS* 2019, 116(52):26580-26590.



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