

## Healthcare industry BW

### varionostic: specialist in epigenetic analyses

**Ulm-based varionostic helps epigenetics researchers to obtain information on gene activity. The company is specifically focused on the analysis of methyl groups (-CH<sub>3</sub>) that are attached to DNA and turn genes on and off. Just as the field of epigenetics, previously only known to insiders, has emerged as a biomedical area of research, the University of Ulm spin-off has matured and grown over the past six years since it was set up.**

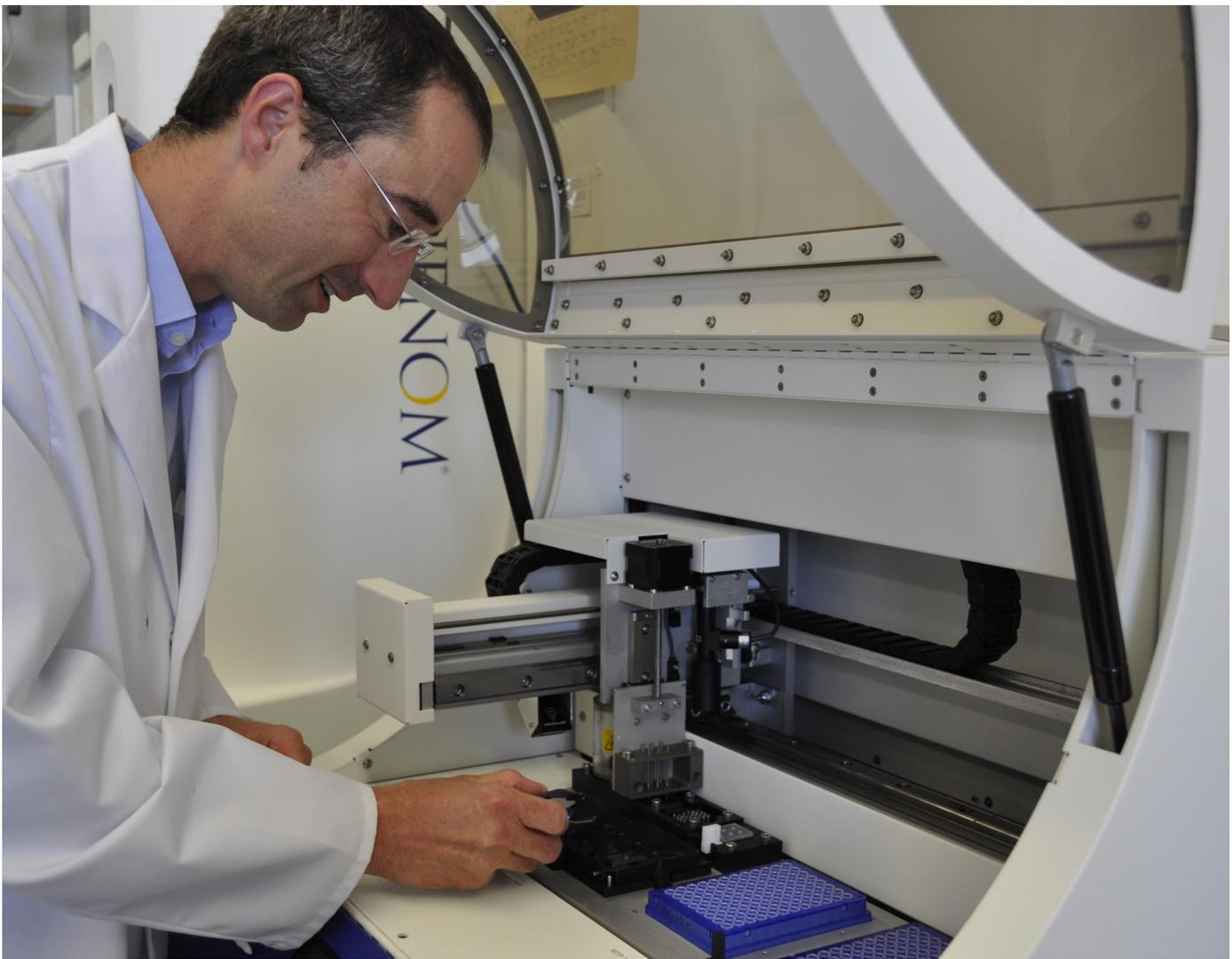
The two company founders, Uwe Gerstenmaier and Hubert Beyrle, plan to use their comprehensive method portfolio and the implementation of a quality management system (ISO/IEC 17025) to tap into the drug development market. In addition to providing bioanalytical services to biomedical researchers and increasingly also to the diagnostics industry focusing on the personalised medicine segment, the Ulm-based biotech company is also planning to work with researchers in larger-scale cooperative projects.

### Epigenetics is gaining in importance

Epigenetic issues are gaining in importance in the fields of oncology, stem cell research and the neurosciences. At least this is what the company is seeing from the increasing number of orders from clients in these fields. Epigenetics is a young bioscientific discipline focused on the study of the mechanisms and consequences of heritable chromosome modifications that do not involve a change in the underlying DNA sequence. Examples of such changes are: modification of specific DNA bases (DNA methylation), chromatin modification (histone modification) and RNAi-mediated mechanisms. All these changes regulate gene expression without altering the nucleotide sequence.

The genetic regulation of development and disease processes is not yet understood in detail. However, epigenetics research has made a considerable contribution to increasing our current understanding of the role of epigenetic modifications. Uwe Gerstenmaier reports that in addition to methylcytosine, the methylated form of the DNA base cytosine, hydroxymethylcytosine (formed from cytosine by adding a methyl group and then a hydroxy group) has been identified as a potential epigenetic marker. Detailed knowledge of these two markers may provide researchers with more information as to how epigenetic modifications regulate gene transcription, amongst other things. Working in cooperation with researchers from the University of Ulm, varionostic is currently involved in a project to develop a test method involving methylcystosine and hydroxymethylcytosine.

In order to be able to offer its clients answers to any epigenetic question they might have, varionostic recently made the biggest investment it has made since its establishment. The MassArray platform is the latest addition to the company's equipment and enables it to increase sample throughput and



varionostic CEO Uwe Gerstenmaier hopes to position the company more broadly with the MassArray technology  
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the read length of gene regions under investigation. With this new platform, varionostic now has available all standard (epi)genetic analysis methods. Uwe Gerstenmaier is convinced that his company will not only become an attractive service provider, but also an attractive partner for comprehensive research projects.

Whether the company uses the MassArray platform, pyrosequencing, real-time PCR or capillary sequencing for dealing with a client's request depends on the issue to be clarified (methylation, genotyping, allele frequency, species identification), the type and size of the DNA sample as well as the client's budget. The methods can be combined and data obtained can be validated using different systems.

## varionostic has a unique specialised competence in epigenetic research

Gerstenmaier knows from his colleagues working in academic research how important it is to find answers to scientific questions without having to pay a fortune. Basic and clinical researchers interested in region-specific methylation contract him for bioanalytical services. He also tells us that he is not aware of any other company in Europe with specialised competence in epigenetic research.

Research institutions are the company's greatest "competitors". However, varionostic has established a lead in terms of its experience in setting up methylation assays using the



Bioactive Plant Foods Network, which brings together around 25 partners (including plant breeders and nutrition experts) with the goal of using the South American plants amaranth and quinoa to assess the affect of food on human health. In cooperation with the Esslingen University of Applied Sciences (Faculty of Applied Sciences, Department of Biotechnology), varionostic carries out investigations involving amaranth in which cell biological activities are combined with molecular biology studies. Gerstenmaier believes that varionostic's participation in the Bioactive Plant Foods Network will be quite fruitful, particularly given that one of his major personal interests is the interactions between epigenetics and nutrition.

The company is about to reach a new stage of development. As an established provider of epigenetic analyses using all available state-of-the-art methods and equipment, varionostic now plans to grow and tap into new markets, clearly evident when one realises that the varionostic team of six is planning to expand its current company space to around 250 square metres. More than 50% of the space is reserved for laboratories which will deal specifically with epigenetic investigations.

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#### **The article is part of the following dossiers**



Epigenetics – heritable traits without changing the DNA sequence

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