

Based on extensive expertise and experience in information technology, especially in big data and data mining tools, **appecon GmbH** is expanding its services into healthcare and life sciences. **aixonomics™** provides a new informatics platform for the integration of relevant clinical and genomic information from patient results generated during appropriate diagnostic assessments. This consolidation of information supports clinicians in their daily work by enabling quicker and easier determination of **genetic mutation(s) in relevant genes** for patient specific therapy while providing a comprehensive overview of the **interpretation of patient laboratory outcomes** in the diagnosis of disease. Interpretation of patient data is further fortified by data mining analyses of open source datasets associated with disease profile. This **decision support resource** enables and encourages the continued implementation of **genomic medicine** and reinforces the practice of **precision medicine** in daily routine care for sustainable healthcare practice.



## Employing technology advances for effective healthcare practice

The algorithm designed by **appecon** simplifies the diagnostic workflow performed by the attending laboratory analyst and molecular pathologist by circumventing the requirement to manually analyse PCR-based results associated specifically with genetic mutations of a genetic biomarker. **aixonomics™** extracts PCR results generated by the laboratory's PCR platform and automatically calls any genetic mutation present in the amplified target gene. To reach the highest possible accuracy during analyses, the platform does not only integrate patient records from the pertaining laboratory hospital, but it also incorporates thousands of openly available genetic mutation datasets with its big data technology. As an example, our system allows correct calling of genetic mutations for the standard genetic markers of lung cancer: EGFR, KRAS, and BRAF. We are currently finalising the molecular testing analytical package for lung cancer to include ROS-1 and ALK fusion abnormalities. The Lung Cancer Module satisfies the requirements by clinical guidelines for precise molecular evaluation of the patient sample.

## Relevance of aixonomics™ for hospitals at the European level

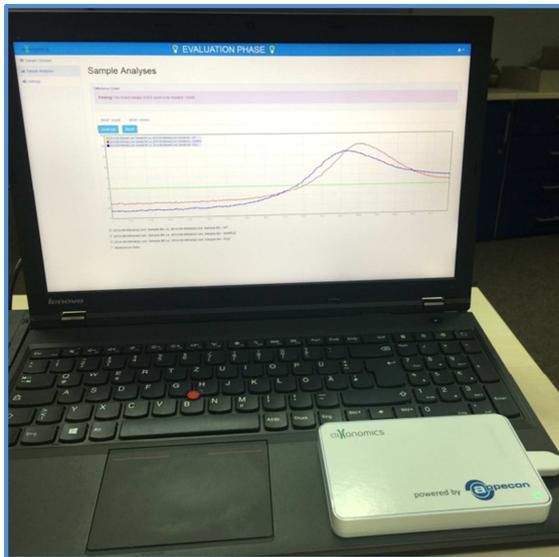
The role of the molecular pathology is to dissect and to evaluate tissue samples from patients, for example suspected of developing cancer. The analyses of these patient samples form a solid basis for the diagnosis of the developmental stage of the cancer, and enables identification of possible targeted therapy based on genetic profiling. These genetic molecular analyses rely largely on PCR-based assays. In regards to assay outcomes based on melt curve analyses, the following points obstructs the efficient use of this technology:

- **High time consumption** in the interpretation of melt curves by experienced laboratory analyst and/or molecular biologist
- Variations in the form of melt curves associated with specific genetic elements resulting in **ambiguity of existing genetic mutations** as identified by technical analysts
- **Higher cost** associated with additional analyses of deviating melt curves **via next generation sequencing (outsourcing)**

The solutions provided by appecon GmbH via aixonomics™, exemplifies the efficient use of genetic information in routine care at regional hospitals by exploiting the expertise of multiple disciplines. The molecular pathology laboratories will benefit in the following ways:

- **Automation of accurate interpretation of genetic data** by decreasing the time intensive analyses of raw data by expert technical analysts
- Ensuring a more **robust genetic mutation calling** via a smart IT platform which learns and recognizes melt curve patterns associated with specific genetic mutations
- Circumventing the need of direct sequencing of ambiguous melt curves.

## aixonomics™ in a post-genomic era



Healthcare is increasingly shifting from collective care to individual care. The utilization of genetic analyses in routine care by regional hospitals is inevitable in order to allow efficient and cost-saving routine care to all patients. aixonomics™ is a revolutionising IT platform which addresses this need, and is designed to **easily integrate into existing hospital IT infrastructure**.

As the era of post-genomic studies continues to unravel new insights into individual diversity, the exploration of how this knowledge can be used most effectively for improving patient care will accentuate a more precise execution of personalised medicine. The tools provided by aixonomics™ ensure a solid foundation for incorporation of additional genetic analyses in the future.

**The aixonomics™ platform simplifies multiple complex data mining analyses of patient data using (epi)genomic and -omic biological datasets for the molecular pathologists.**