

# Test Kit for personalized treatment

## Novel predictive marker for Hydroxyurea (HU) resistance in treatment of Leukemia

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**Technical Field**
Biotechnology – health, medico-technical

**Business opportunity**
• Research collaboration
• Looking for investor for spin-out

**Current state of technology**
A plant chemo-resistance discovery model has been able to demonstrate specific DNA mutations inducing drug resistance due to altered enzyme activity. A correlation between this plant enzyme activity and drug response was confirmed by mammalian patient in vitro data. The technology has applied for further Proof of Concept funding of €134408. Prototype of a prognostic test kit for screening of personalized drug applicability is expected in 2010 together with a first clinical trial of 150 patients.

**Applications**
• The prognostic test kit will be part of a standard pre-treatment procedure, aiding clinicians in making rational decisions allowing personalized patient treatment.

• Potential for the development of additional test-kits thereby increasing the potential product pipeline.

**Commercial Value**
Leukemia prevalence in the seven major markets (France, Germany, Italy, Spain, UK,US, Japan) is expected to research 227,180 in 2013*.
Treatment with chemotherapy continues to present clinical challenges due to chemotherapy resistances and a lack of technology for accurately predicting the chemo-sensitivity of individual cancers.

Hydroyurea - Hydrea (HU) is a widely use agent in the treatment of Leukemia. Potentially all patient diagnosed with leukemia could benefit from individual testing securing optimal choice of treatment as well as ongoing monitoring of disease progression due to HU resistances.
The technology provides an excellent opportunity for companies and investors for early involvement working alongside the Proof-of-Concept project.

**The Technology**
Blood cancers are often treated with cytotoxic agents that prevent cell division. However, relapses are frequent due to development of chemotherapy-resistance.

This technology allows the development of a test-kit able to predict cancer sensitivity toward the chemotherapeutic agent hydroxyurea (HU). A specific enzyme activity is used as a predictive marker for blood cancer response to HU treatment.

The test-kit will allow clinicians to determine whether or not a specific blood cancer patient will benefit from treatment with HU and allow close monitoring of development of HU resistance, ensuring a shift to alternative treatment before severe disease progression.

**Intellectual Property Rights**
A Danish patent application has been filed August 2009 and has received the application number PA 2009 00921. The patent application is unpublished. Aarhus University is the full owner of the all Intellectual Property Rights.

## Inventors

**Jan-Elo Jørgensen**

***Associate professor,Department of Molecular Biology, Aarhus University***

*I have researched and lectured extensively on the topic of Molecular Biology of Plants for 24 years. I was a Post-Doc at the Salk Institute, La Jolla, California 1991-1993. In 2001 I founded and managed Plantic ApS, a Danish biotechnology company in cancer therapeutics.*
*My key focus has been cell cycle and development as well as cancer.*

**Trine Juul**

***Postdoc, Department of Molecular Biology, Aarhus University***

*I have 13 years of experience in the field of plant molecular biology of which five years have been spent abroad at the John Innes Institute, UK and INRA, France. For two years I was employed as a researcher at the biotech company Plantic Aps. During my career I have been interested in plant growth and development working with several different plant species and am now involved in setting up a system where plants can be used to get a better understanding of human cancer diseases.*

**Stig Uggerhøj Andersen**

***Postdoc, Department of Moleculær Biology, Aarhus University***

*During my PhD, I studied symbiotic nitrogen fixation in legumes. As a post doc, my research activity has been centered on regulation of cell cycle and stem cell activity using the plant Arabidopsis as a model system. I have pursued this interest first at Plantic ApS and then at the Max Planck Institute, Tübingen, Germany, before returning to Aarhus University. Currently, I focus on studying the effects of chemotherapeutic agents by combining genetic and pharmacological intervention and on optimizing the Arabidopsis platform for this purpose by taking advantage of deep sequencing technology.*

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