SLCO1B3 Genotyping to Predict a Survival Prognosis of Prostate Cancer

Summary (1024-character limit)

This invention identifies two polymorphic genetic markers in the SLCO1B3 (formerly SLC21A8) gene, called 334T>G and 699G>A, that can be measured in genomic DNA obtained from a blood sample to predict survival from diagnosis of prostate cancer in that individual patient.

NIH Reference Number

E-083-2007

Product Type

- Diagnostics

Keywords

- Prostate, Androgen-directed Therapy, Hormone-Refractory, Prognostic, Diagnostic, personalized medicine, genomics, genetic markers, predictive markers, biomarkers, SLCO1B3, Prognostic, Figg

Collaboration Opportunity

This invention is available for licensing and co-development.

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Description of Technology

Steroid hormones have been implicated to play a fundamental role in the pathogenesis of prostate cancer. Polymorphisms in the genes that code for enzymes, or hormones involved in androgen regulatory pathway, reportedly influence risk for developing prostate cancer. Since many membrane transporters are modulators of steroid hormones absorption and tissue distribution, genetic polymorphisms in genes encoding these transporters may account for the risk of prostate cancer and the predicting of survival. The OATP1B3 (formerly OATP8) steroid uptake transporter is overexpressed in prostate cancer, and polymorphisms in SLCO1B3 were associated with altered testosterone uptake, and also an increased prostate cancer risk.

This invention identifies two polymorphic genetic markers in the SLCO1B3 (formerly SLC21A8) gene, called 334T>G and 699G>A, that can be measured in genomic DNA obtained from a blood sample to predict patient survival from a prostate cancer diagnosis. This genetic profiling result has profound

clinical applications for diagnosis and treatment. Specifically, the inventors provided a correlation between clinical outcome of SLCOIB3 genotype with median survival of androgen-independent prostate cancer. They also showed that the genotype is predictive of testosterone uptake through the OATP1B3 transporter. This information is useful to inform clinical decisions regarding anti-androgen therapy.

Potential Commercial Applications

• Cancer susceptibility testing represents one of the major assets in medical practice.
• SLCO1B3 genotyping can be used in combination on a gene chip with several polymorphisms known to predict survival of prostate cancer patients. Thus, the OATP1B3 polymorphism would be one genetic marker in a series of other markers that would be used to inform clinical decisions.
• SLCO1B3 upregulation can be used as a prognostic tool.
• Potential decrease in severity of side-effects due to ineffective chemotherapeutic agents.
• Potential improvement in design and selection of chemotherapeutic regimens.

Competitive Advantages

• This invention provides a novel marker approach to predicting clinical outcomes in certain patients with prostate cancer.
• Analysis of the markers identified allow a clinician to make informed decisions for personalized cancer therapies.
• New marker for personalized medicine.

Inventor(s)

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Development Stage
• Clinical

Patent Status
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Therapeutic Area
• Cancer/Neoplasm
• Hormonal Systems, Endocrine, and Metabolic Diseases