Granulin as a Target for Tumor Diagnosis and Growth Regulation
Tech ID: 10174 / UC Case 2000-236-0

BACKGROUND
Cancer is the result of cumulative multiple genetic mutations, which result in the activation of oncogenes and/or the inactivation of tumor suppressor genes. It is the differential expression of these critical genes and their downstream effectors that enables cells to override growth controls and undergo carcinogenesis. While a variety of methods are currently employed to isolate genes associated with particular differential phenotypes, these techniques identify tissue-enriched mRNAs rather than tissue-specific proteins. Thus, there remains a need for a differential screening technique that provides actual confirmation of the presence of a protein product, not just the capacity to synthesize a protein. In addition, there is a need for proteins with antigenic determinants that may be recognized by the immune system.

DESCRIPTION
Researchers at the University of California have developed a new method for identifying differentially expressed gene products that are translated from mRNA species. This method, termed differential immuno-absorption (DIA), uses subtractive antibody-based screening of target versus control tissues followed by screening of a cDNA expression library to identify differentially expressed proteins. DIA can be coupled to cDNA microarray hybridization and used in the identification of genes that play a role in the malignant progression of cancer.

Using this method, the researchers identified a putative growth factor gene, granulin D, which may play a role in the malignant progression of glioblastomas. The researchers determined that granulin D stimulates growth of glial cells in vitro. In addition, antibodies to granulin D inhibit growth of early-passage human brain tumor cell cultures in vitro. Thus, inhibition of granulin D could be of clinical importance.

APPLICATIONS
▶ Identification of gene products that are differentially expressed in tumors
▶ Detection and monitoring of cancers overexpressing Granulin
▶ Development of therapeutics for nervous system cancer based on inhibition of granulin D
▶ Treatment of cancers overexpressing Granulin
▶ Cancer vaccines based on Granulin antigens

ADVANTAGES
▶ The new method selects gene products that are actually translated from mRNA species.
▶ Antibodies to clones of interest can be generated for antibody-based studies.

RELATED MATERIALS

PATENT STATUS

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INVENTORS
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OTHER INFORMATION
KEYWORDS
therapeutics diagnostics Cancer vaccine, therapeutic, oncogene, glioma, glioblastoma, GBM

CATEGORIZED AS
▶ Biotechnology
▶ Medical
▶ Diagnostics
▶ Disease: Cancer
▶ Therapeutics
▶ Vaccines

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