

## MUTATIONS IN THE G PROTEIN COUPLED RECEPTOR (GPCR) GENE FAMILY IN MELANOMA

### SUMMARY

Researchers at the NIH have identified several novel somatic (e.g., tumor-specific) alterations.

### REFERENCE NUMBER

E-244-2010

### PRODUCT TYPE

- Therapeutics

### COLLABORATION OPPORTUNITY

This invention is available for licensing.

### DESCRIPTION OF TECHNOLOGY

Using exon capture and next generation sequencing approaches to analyze the entire G protein coupled receptor (GPCR) gene family in melanoma, the researchers at the NIH have identified several novel somatic (e.g., tumor-specific) alterations. GPCRs play an integral part in regulating physiological functions and the importance of these molecules is evident by the fact that approximately half of the current FDA approved therapeutics target GPCRs or their direct downstream signaling components.

Many of the GPCR gene mutations identified by the NIH researchers were mutated in a large portion of melanoma patients and already have inhibitors, the most notable being the Glutamate Receptor Metabotropic 3 (GRM3) mutation which could be functionally significant for melanoma tumorigenesis. Therefore, this technology could aid in the development of specific inhibitors of GRM3 as well as the pathway it activates, mitogen-activated protein kinase (MEK), for the treatment of melanoma patients with these mutations. To complement these findings, human melanoma metastatic cell lines harboring GRM3 mutations are also available for licensing.

### POTENTIAL COMMERCIAL APPLICATIONS

- Diagnostic array for the detection of GRM3 mutations
- Method of identifying GRM3 inhibitors as therapeutic agents to treat malignant melanoma patients.
- In vitro and in vivo cell model for the GRM3 mutation in melanoma. This is a useful tool for investigating GRM3 phenotype biology, including growth, motility, invasion, and metabolite production.

### COMPETITIVE ADVANTAGES

- GPCR mutations, GRM3 in particular, are frequent in melanomas.
- Several inhibitors to GPCR and MEK are already in clinical trials, thus this technology may prove useful

for the development of novel diagnostic tests and therapeutics.

- Associated cell lines derived from melanoma patients are available.

### **INVENTOR(S)**

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### **DEVELOPMENT STAGE**

- Pre-clinical (in vivo)

### **PATENT STATUS**

- **U.S. Issued:** US Patent No. 8,795,964 issued 05 Aug 2014

### **RELATED TECHNOLOGIES**

- E-229-2010
- E-272-2008
- E-024-2012
- E-013-2011

### **THERAPEUTIC AREA**

- Cancer/Neoplasm