Technology Opportunity Bulletin

Multi-Drug Resistance Proteins (MRPs)

Tech ID: 1992-008

Description:

In 1992, Queen's University researchers Drs. Susan Cole and Roger Deeley cloned a highly overexpressed novel mRNA from doxorubicin-selected multidrug resistant lung cancer cells. They subsequently established that the Multidrug Resistance Protein (MRP1) encoded by this mRNA was a 190 kDa ATP-binding phosphoglycoprotein capable of conferring resistance on previously sensitive cells.

MRP1 is the founding member of subfamily "C" of the ATP-Binding Cassette ("ABC") superfamily of transport proteins, which now includes six MRP1 homologs as well as the gene responsible for cystic fibrosis (CFTR). MRPs are separate and distinct from the well known family of transporter proteins called p-glycoproteins.

In addition to conferring resistance to anticancer drugs, MRP1 and several of its most closely related homologs are efficient energy dependent cellular efflux pumps of glutathione (GSH) and glucuronide conjugated xenobiotics (the so-called Phase III elimination step of drug metabolism). MRP1 also transports certain important physiological molecules such as the cysteinyl leukotriene LTC4.

Applications:

- Human MRP Antibodies: We provide non-exclusive licenses to MRP1 antibodies. We also have four monoclonal antibodies (QCRL-1 to -4) to MRP1 that can be purchased directly from PARTEQ Innovations or licensed with hybridomas.
- MRP Drug Disposition Assays: MRPs affect drug distribution, metabolism and efficacy. We offer licenses for use of MRPs in drug transport and distribution studies – for in-house pharmaceutical research and development and for commercial fee-based MRP drug disposition kits and services. We also have various MRP cell lines, vectors and membrane vesicles for license.
- Therapeutics: There is the opportunity for a licensee to develop a therapeutic approach to inhibit MRP1 activity within human tumours and thus increase the efficacy of cancer chemotherapeutics.

Status of Commercialization:

The MRP proteins, genes, and their methods of use are protected by numerous U.S. and foreign patents and applications. PARTEQ offers licenses for the use of MRP antibodies, MRP in drug transport/disposition assays and services, and therapeutic development of MRP inhibitors.

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