



Southern Illinois University System

### Applications

- Cancer research reagent (WB, ELISA, IP, IF, ICC, IHC)
- Screening/diagnosis of cancer/precancerous conditions (especially high-risk populations)

### Inventor

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*Dr. Cao is an associate professor of medical microbiology, immunology and cell biology at SIU School of Medicine. His research focuses on metabolic pathways, antitumor activity & tumor selectivity.*

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## ARL-1 Specific Antibodies & ARL-1 Biomarker

The aldo-keto reductase family 1 B10 (AKR1B10 or ARL-1) protein is normally expressed in healthy colon tissue, but is decreased or absent in colorectal cancer and precancerous conditions. Conversely, ARL-1 is normally low or absent in breast, prostate, liver, and lung tissues, but is over-expressed in cancers of these tissues.

### Invention

The first part of this invention covers a novel antibody, which may be monoclonal or polyclonal, against ARL-1 protein. The antibody is both sensitive and highly specific to ARL-1 and has great utility as a cancer research tool. The second part of this invention relates to the use of ARL-1 as a biomarker and diagnostic tool. Approximately 816,000 new cases of colorectal, breast, prostate, liver, and lung cancers are identified yearly in the U.S., and around one third as many related deaths occur. These statistics make the ARL-1 biomarker an important tool for improving screening and early diagnostic methods, which will in turn help increase survival rates. The biomarker is superior to existing biomarkers for the cancers listed above, which are often non-specific, not reliable, and prone to false negatives and positives.

### Key Advantages

- Antibody is sensitive/highly specific (antigen is less than 20 amino acids long)
- No antibody cross reactivity with other AKR proteins
- Multiple testing methods for biomarker

### Status

- U.S. Patent #8,114,606 issued February 14, 2012 (antibody)
- U.S. Patent #8,551,720 issued October 8, 2013 (colorectal biomarker)
- U.S. Patent #8,685,666 issued April 1, 2014 (cancer biomarker)
- Polyclonal antibody specificity is confirmed. Clinical data has been analyzed for expression profiling. *In vivo* studies are planned and additional clinical data will be collected.
- The technology is available for license.

*Other opportunities related to this technology, included but not limited to sponsored and/or collaborative research, may be available. Please reach out to the designated contact identified at left for more information.*