Case Study
FLC Midwest/Southeast Joint Regional Meeting
October 25-27, 2006

Technology Description
(A brief description of the technology involved)

This technology is a novel expression system for membrane proteins. The system includes a series of expression vectors - stretches of DNA with special inducible genes and special ends - that allow the insertion of genes of interest into the stretch of DNA, making it a circle. These 'designer DNA circles' or vectors are then inserted into photosynthetic bacteria cells wherein the vectors 'hijack' the protein manufacturing capability of the photosynthetic bacteria to manufacture the protein coded by the gene inserted in the vector. The photosynthetic bacteria are a key part of the process, related to the characteristics of membrane proteins. These proteins do not like to be in aqueous environments, rather they like to be all or partially associated with lipids (as in their native membrane environment). The photosynthetic bacteria can be induced to produce excess membrane in the cell at the same time as the foreign protein is produced providing a favorable intracellular environment for the expressed membrane proteins.

Membrane proteins are an extremely important group of proteins as they include all the proteins involved with cell signaling, cell recognition, transportation of materials into the cell and receptors to 'sense' the environment of the cell. They are the target of many drugs and are notoriously difficult to isolate in large amounts.

The Players
(Who's who?)

It was developed solely by scientists working at Argonne
We have had many ~30 requests for the material (international) – MTA issues
Additional requests for NDA's ~ 15
New NIH center grant including a university and a private company
WFO agreement with a large Ag company for a feasibility study
Several life science companies who are looking at the technology as a product to sell to the research community
Drug company wanting to fund a feasibility study

The issue(s),
(IP arrangements, licensing options, CRADAs, business models, and desired outcomes for each party, other)

One patent issued, several applications and invention disclosures in the pipeline
Have not clearly defined a clear business model/licensing strategy yet – target keeps moving

Valuation of the technology is a major problem. Fame or Fortune?

Research market –First sale – researchers can replicate material as much as they want (by growing cells)
Individual protein/s of interest manufacture – should we own 'their protein with our ends'; charge per mg of protein produced? Charge per number of proteins/protein complexes/ produced?
'Research tools' issue – NIH sharing/IP policy