# *Novel Processes for the Synthesis of Polyisoprene and Polyisoprene-Polyisobutylene Block and Graft Copolymers based on Natural Rubber Biosynthesis*

*The Puskas group CHE #0616834 GOALI*
*Program officer: Dr. Tyrone D. Mitchell*

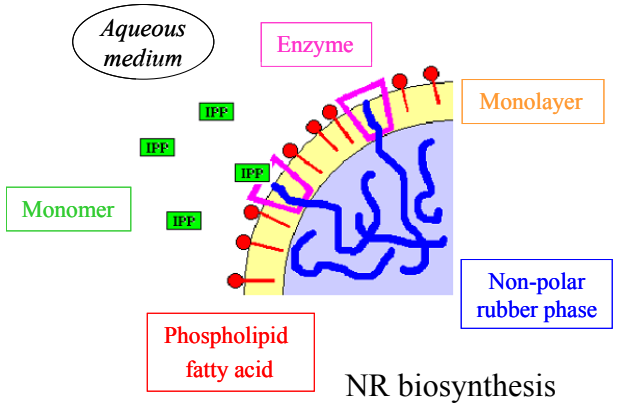
**CoPI: Adel Halasa, Goodyear Tire@Rubber Co.**
**Coinvestigator: Joseph P. Kennedy**

**Collaborators: Colleen McMahan, USDA**
**Katrina Cornish, Yulex Inc.**
**Alain Deffieux, CNRS France**
**Herbert Mayr, Germany**

The main objective of this project is to design a Natural Living Polymerization (NLP) system that may lead to synthetic "Natural Rubber" (NR or *cis*-1,4-polyisoprene *c*PIP).

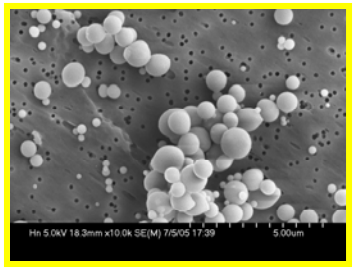
**Students:**
**Emilie Gautriaud (France) – MS in 2006**
**Andrew Heidenreich (USA), Ph.D.**
**Kurt Chiang (Canada), Ph.D.**
**Allia Lindsay, REU**
**PDF: Haibo Li (China)**

# Progress



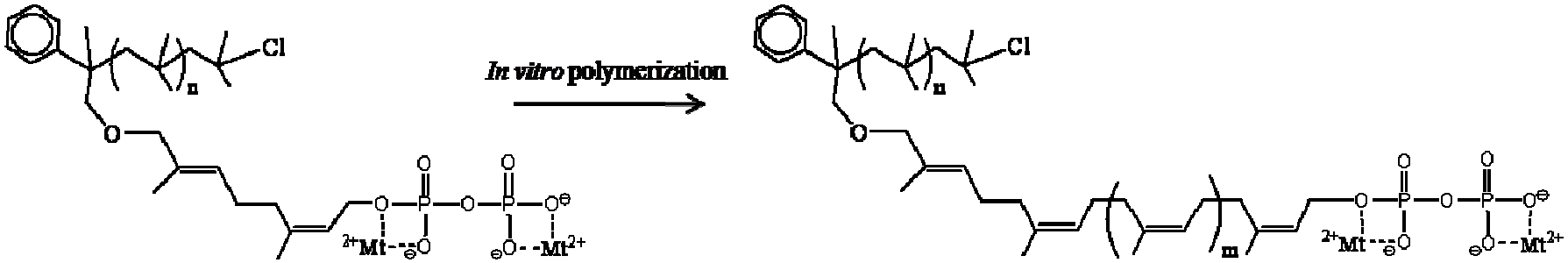

NR biosynthesis

1. SEC analysis of NR produced *in vitro* at the USDA
   - long-chain branching

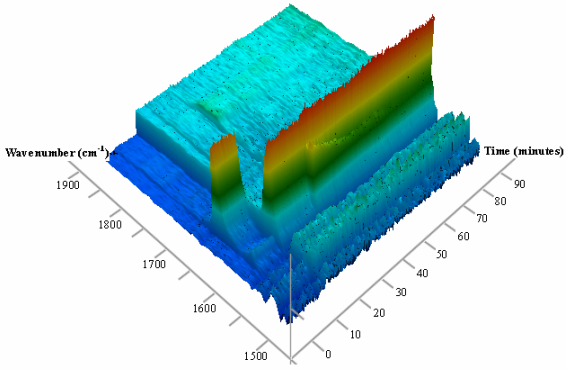


*Hevea* rubber particles

2. Macroinitiator synthesis for the *in vitro* production of PIB-*b*-PIP




3. *In situ* FTIR monitoring




of model reactions.

4. Synthesis of branched polyisoprene for structure-property relationship studies.