



Progenesis

Technologies, LLC.



Progenesis Technologies, LLC

- Developer of genetically engineered biopolymers
- Patents dominate recombinant alginate production
- Founded in 2006 out of Marshall University
 - Dr. Richard Niles
 - Dr. Hongwei Yu

Uses of Seaweed Alginate



- Medical use to expedite wound healing and treat acid reflux disease
- Pharmaceutical use for slow release of active ingredients
- Food additive as a thickener and stabilizer
- Industrial thickener/ lubricant; Textile and Paper industry

The Industry Problem–Using Seaweed



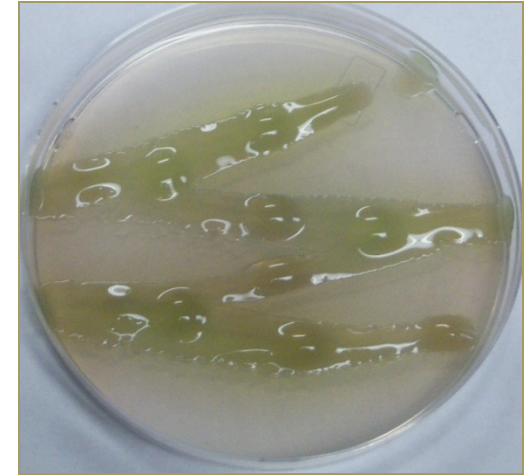
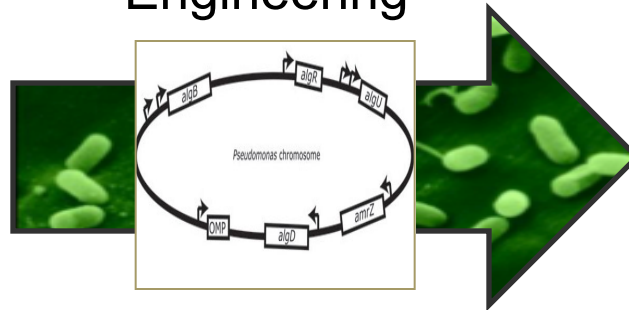
- Fixed Composition results in limited customization
- Seasonal and Batch Inconsistency
- Large Amount of Chemical waste
- 15–20 processing steps increases variability, production time, and cost

Our Technology



Wild-Type Bacteria

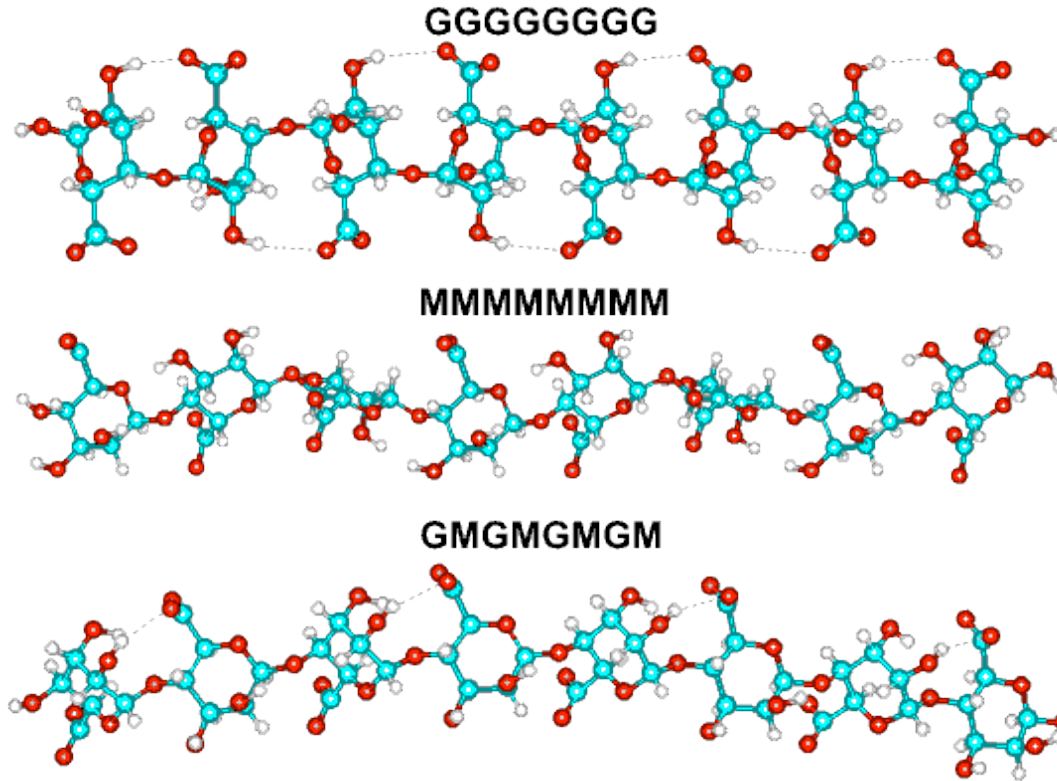
Genetic Engineering



Microbial Alginate Factory



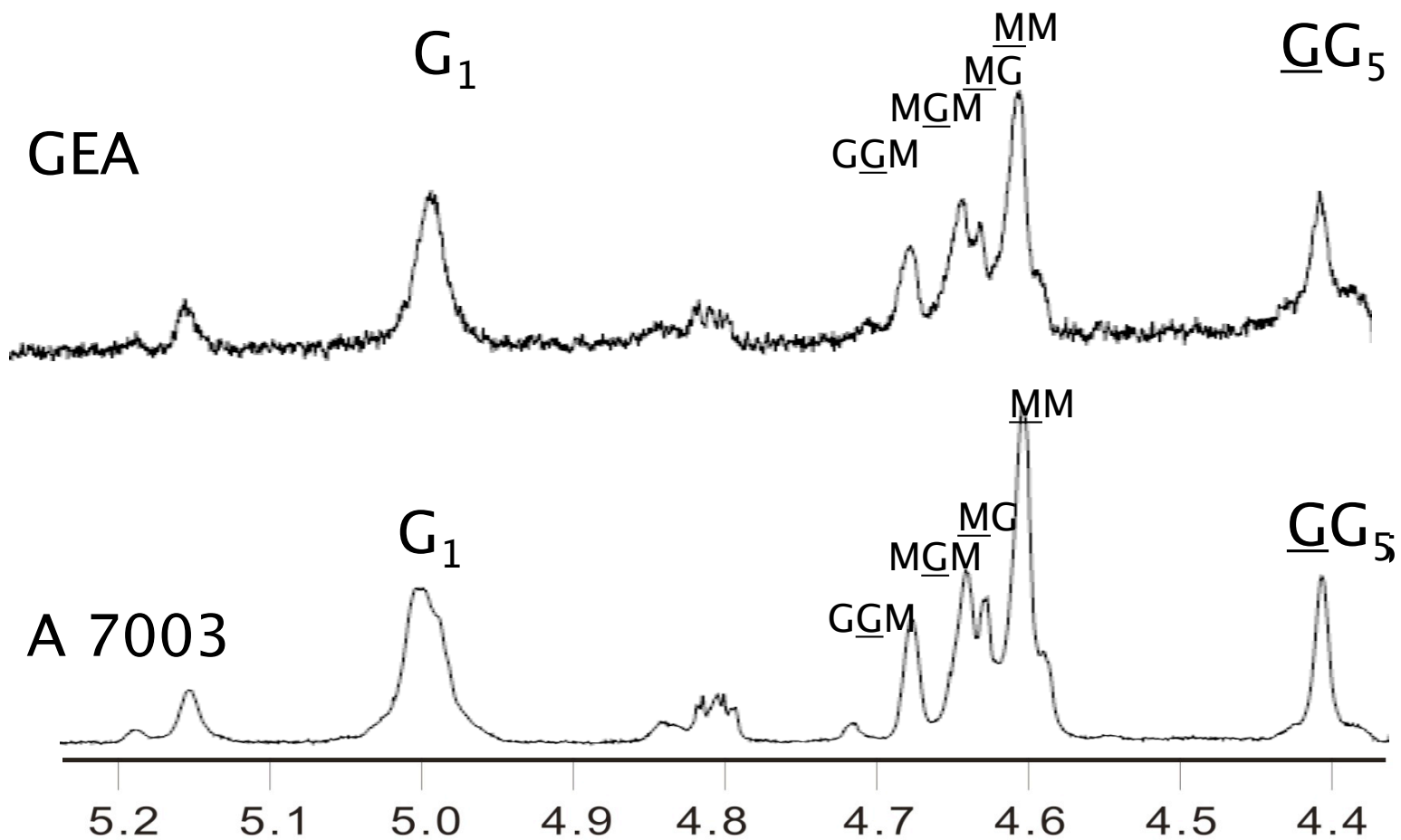
Alginate consists of guluronic (G) & mannuronic (M) monosaccharide (sugars)



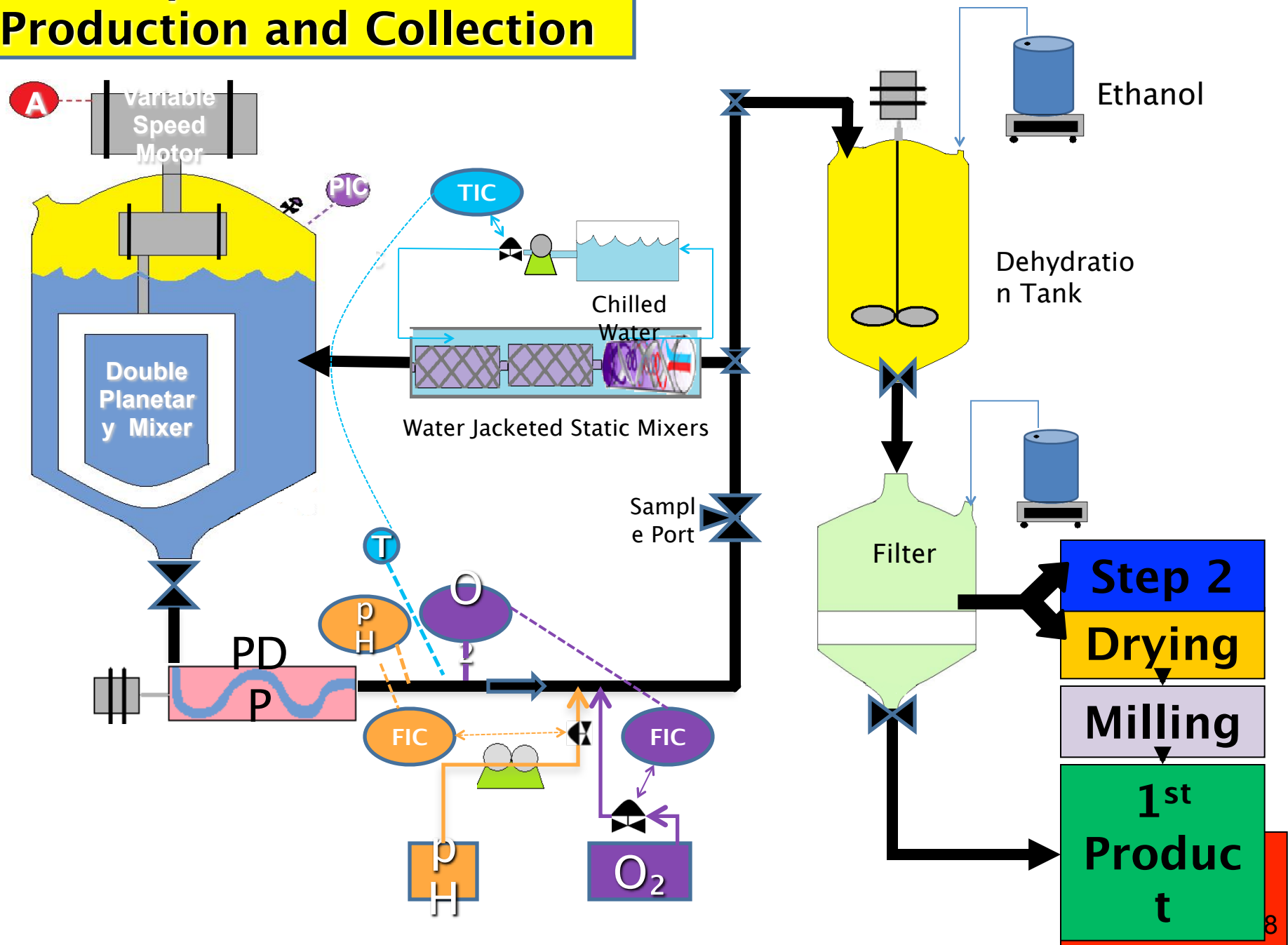
Regulated proteolysis controls mucoid conversion in *Pseudomonas aeruginosa*

Dongru Qiu, Vonya M. Eisinger, Donald W. Rowen and Hongwei D. Yu
Proc. Natl. Acad. Sci. USA 104: 8107-8112, 2007

	F_G	F_M	F_{GG}	F_{MM}	F_{MG}	F_{GGG}	F_{MGM}	F_{GGM}	N_G	N_{G+1}	N_M	Ace
GEA	0.33	0.67	0.24	0.44	0.24	0.15	0.15	0.09	1.36	1.96	2.82	0.20
Alginic acid	0.33	0.67	0.19	0.44	0.23	0.09	0.13	0.10	1.42	2.00	2.93	0.00



Step 1: Bioreactor Production and Collection



The Company

- Located in Huntington, WV near the Biotechnology Center on the campus of Marshall University
- Management team and advisory board in place
- Signed agreement with a global seaweed alginate producer for evaluation of our GEA alginates. Commercial term sheet agreed.

Management and Advisory Board

- Dr. Richard Niles, Ph. D., Co-Founder
 - Chair, Dept. of Biochemistry & Microbiology, Senior Associate Dean for Research and Graduate Education
Marshall University
- Dr. Hongwei Yu, Ph.D., Co-Founder & CSO
 - Professor of Biochemistry & Microbiology, Marshall University
- Dr. Linda Eastham, Manager laboratory operations
- Mr. Gardiner Smith, Executive Chairman, former Glaxo, HGSI, MEMY, ASPV
- Lake Polan, Founder & CEO of Allied Logistics

BUSINESS MODEL

- Angels and economic development
- R&D collaboration revenue
- Licensing milestones and royalties
- Scale up: specialty product supply
- Sustainable revenue by 2015
- Exit transaction(s)
 - Technology sale for bulk markets
 - Niche production for specialty markets



- \$Billion+ Potential Market
- Development Agreement in 2011
- Licensing Agreement in 2013
- Dominant Patent Portfolio
- Experienced management
- Potential for sustainable revenue
- Near term exit possible