Sappi Limited – Intentional Evolution

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Sappi North America

Outline

- Sappi in brief
- Market dynamics
- Sappi intention evolution to date
- Looking forward

SAPPI Limited – at a glance

A leading global provider of sustainable wood fibre products and solutions.

Sappi Business Segments

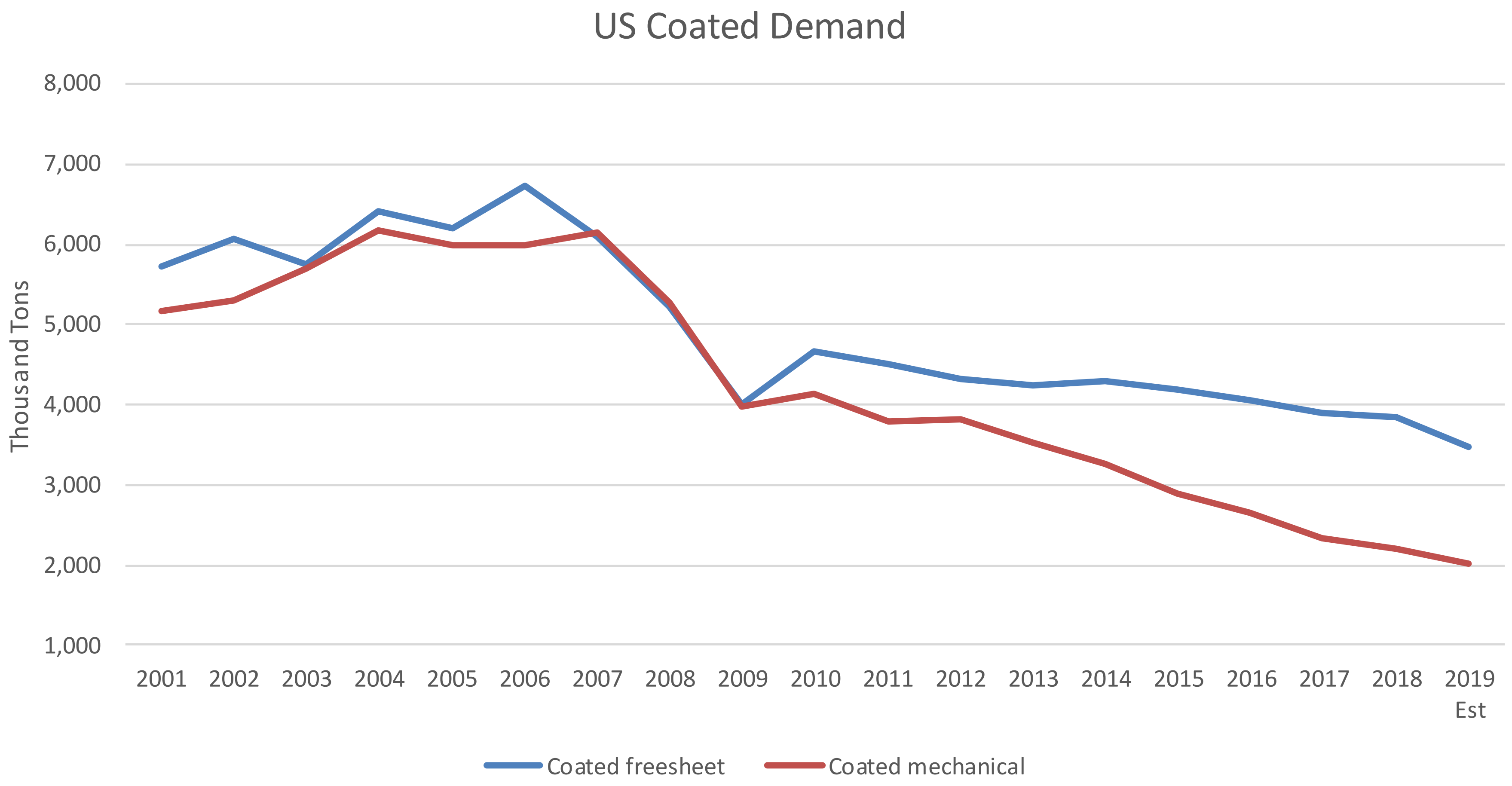
Paper and pulp is core – growth focus:
Specialised cellulose, Specialty papers and Biomaterials

Market Trends

- Growth of digital platforms has resulted in long-term structural demand decline for printing and writing grades

- Sappi has proactively responded to these demand trends by converting capacity into growing markets (packaging, technical papers and dissolving pulp)

US Coated Paper Demand Trend



Coated freesheet demand has declined by 40% and coated mechanical demand by 60% since 2001

Capacity Changes

Coated Freesheet

Company	Location	Annual Net Change (tons)	Date	Comment
Sappi	Biberist, Switzerland	(479,000)	Q2 11	Ceased CFS production at mill
M-real	Aanekoski, Finland	(220,000)	Dec-11	Closed PM2
M-real	Husum, Sweden	60,000	Q1 12	Shift from Aanekoski mill
Stora Enso	Uetersen, Germany	(154,000)	2012	Shift to specialty paper
Smart Papers	Hamilton, OH	(42,000)	Feb-12	Shut last PM at mill
Burgo	Avezzano, Italy	(132,000)	Jul-12	Shut PM1
Arjowiggins	Odense, Denmark	(120,000)	Dec-12	Mill closure
Lecta	Condat, France	(99,000)	Jul-13	Shut PM6
International Pape	Courtland, AL	(116,000)	Q4 13	Mill closure
Sappi	Alfeld, Germany	(165,000)	Q4 13	Shifted PM2 to specialty paper
Ilim Group	Koryazhma, Russia	77,000	Q4 13	New PM7 and coater
Lecta	Zaragoza & Motril, Spain	(40,000)	2014	Shift to specialty paper
Burgo	Avezzano, Italy	(165,000)	Jan-14	Shut PM2
NewPage	Rumford, ME	(45,000)	Feb-14	Indefinitely idled PM12
Sappi	Nijmegen, Netherlands	(265,000)	Jun-14	Mill sold to AIAC to produce specialty paper
Paper Excellence	Lenningen, Germany	(176,000)	Jul-14	Idled PM6
FutureMark	Alsip, IL	(35,000)	Sep-14	Mill indefinitely idled
Sappi	Stanger, South Africa	(88,000)	Dec-14	Transition to uncoated
Arjowiggins	Wizernes, France	(187,000)	2015	Mill closure
Metsa Board	Husum, Sweden	(66,000)	2015	PM8 shift to packaging
Lecta	Zaragoza & Motril, Spain	(66,000)	2015	Shift to specialty paper
APP	Jiangsu, China	(198,000)	2015	PM closures
Catalyst	Rumford, ME	45,000	Jan-15	PM12 restarted
Catalyst	Rumford, ME	(65,000)	Sep-15	PM12 indefinitely idled
Lecta	Zaragoza & Motril, Spain	(56,000)	2016	Shift to specialty paper
Verso	Wickliffe, KY	(215,000)	Apr-16	Mill closure
Catalyst	Rumford, ME	58,000	May-16	PM12 restarted
Moorim	Jinju, South Korea	(114,000)	Q2 16	PM closures
Hansol	Osan, South Korea	(103,000)	Q2 16	PM closures
Stora Enso	Suzhou Mill, China	(265,000)	Q4 16	PM closures
Verso	Jay, ME	(50,000)	Q1 17	Shut PM3 (restarted on linerboard in 2018)
Sappi	Lanaken Mill, Belgium	220,000	)17-2019	Transition from CGW to CFS
Appleton Coated	Appleton, WI	(280,000)	Oct-17	Mill shut (partially reopened in 2018 on other grades)
West Linn Paper	West Linn, OR	(267,000)	Oct-17	Mill shut
Sappi	Somerset, ME		Q2 18	PM1 conversion to packaging
Net Change		**(3,813,000)**		

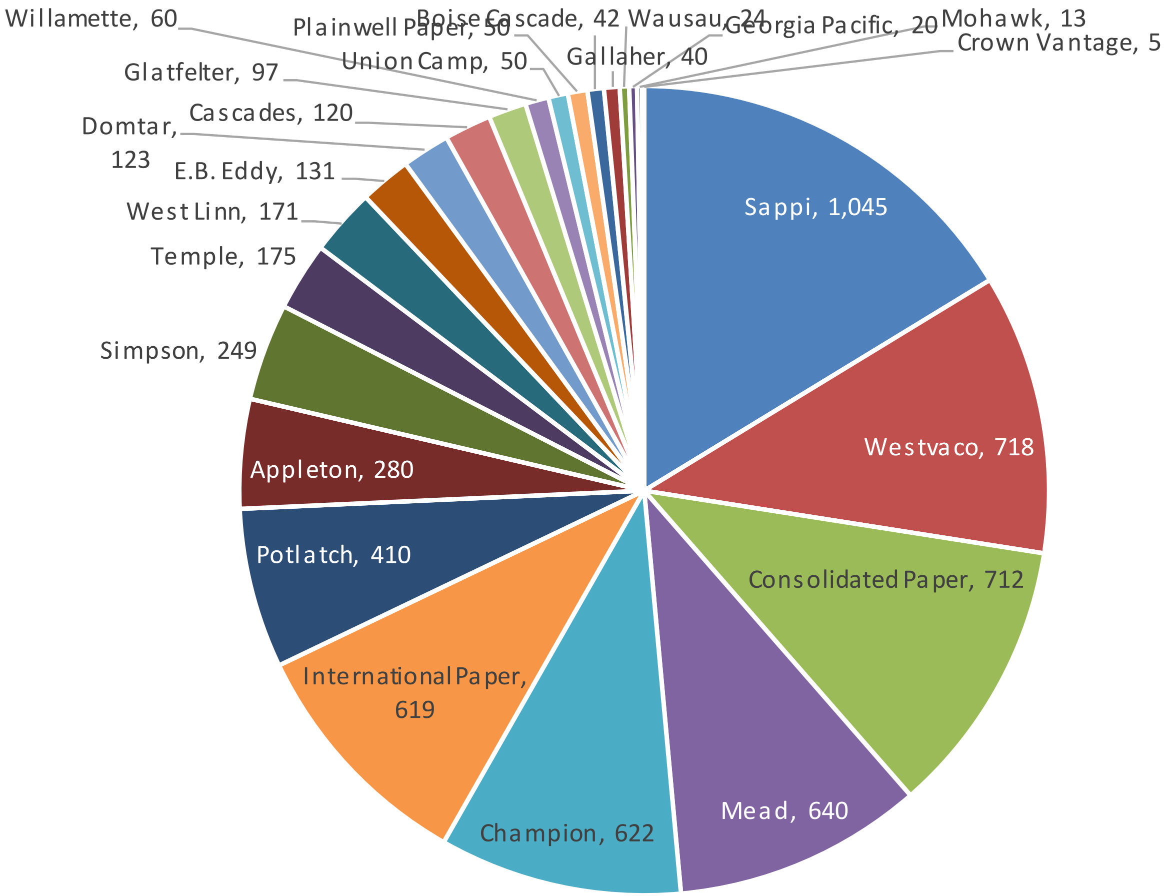
Coated Mechanical

Company	Location	Annual Net Change (tons)	Date	Comment
NewPage	Stevens Pt, WI	(247,000)	Feb-11	Whiting Mill closed
Holmen	Madrid, Spain	(187,000)	Mar-11	Idled PM61
Oji	Fuji, Japan	(71,500)	Apr-11	Shut PM1
Rainbow Papers	Mehsana, India	134,500	Q3 11	Started 2nd hand machine
Sun Paper	Yanzhou Mill, China	385,000	Q3 11	New PM24
Verso	Bucksport, ME	(90,000)	Oct-11	Shut down PM2
Myllykoski/UPM	Anjalankoski, Finland	(232,000)	Dec-11	Mill closure
Myllykoski/UPM	Albbruck, Germany	(353,000)	Jan-12	Mill closure
Norske Skog	Honefoss, Norway	(154,000)	Mar-12	Mill closure
Resolute	Catawba, SC	(125,000)	Jun-12	Indefinite shut - PM1
Verso	Sartell, MN	(180,000)	Aug-12	Mill closure
Guangxi Tianyi	Fangchenggang Guang:	165,000	2013	Started 2nd hand machine
Tan Mai	Kontum, Vietnam	220,000	2013	New machine
UPM	Stracell, France	(297,000)	Jan-13	Ceased production of coated paper
Investlepram Kan	Krasnokamsk, Russia	95,000	Mar-13	Restarted PM3
Norske Skog	Walsum, Germany	(248,000)	Dec-13	Shut PM4
Stora Enso	Corbehem, France	(364,000)	ıary 2014	Mill closure
NewPage	Rumford, ME	(22,000)	Feb-14	Indefinite shut - PM12
Stora Enso	Veitsiluoto, Finland	(209,000)	Mar-14	Shut PM1
Norske Skog	Tasmania, Australia	154,000	Apr-14	Converted PM2 from newsprint
FutureMark	Alsip, IL	(124,000)	Sep-14	Mill indefinitely idled
Verso	Bucksport, ME	(350,000)	Dec-14	Mill closure
Metsa Board	Husum, Sweden	(132,000)	2015	PM8 shift to packaging
Catalyst	Rumford, ME	(47,000)	Sep-15	PM12 indefinitely idled
Verso	Jay, ME	(150,000)	Q4 15	PM2 shut down
Burgo	Duino, Italy	(165,000)	Dec-15	Permanent closure, PM2
Kotkamills	Kotka, Finland	(198,000)	Jan-16	Permanent closure, PM2
Catalyst	Rumford, ME	41,000	May-16	PM12 restarted
Norske Skog	Walsum, Germany	(225,000)	May-16	Permanent closure, PM10
Resolute	Catawba, SC	(200,000)	Jul-17	PM2 shut down
UPM	Kaukas, Finland	(248,000)	Q1 17	Shut PM2
Verso	Jay, ME	(150,000)	Q1 17	Shut PM3 (restarted on linerboard in 2018)
UPM	Grand Rapids, MN	(128,000)	Q1 18	Shut PM5
Net Change		**(3,702,000)**		

Source: Midland, RISI

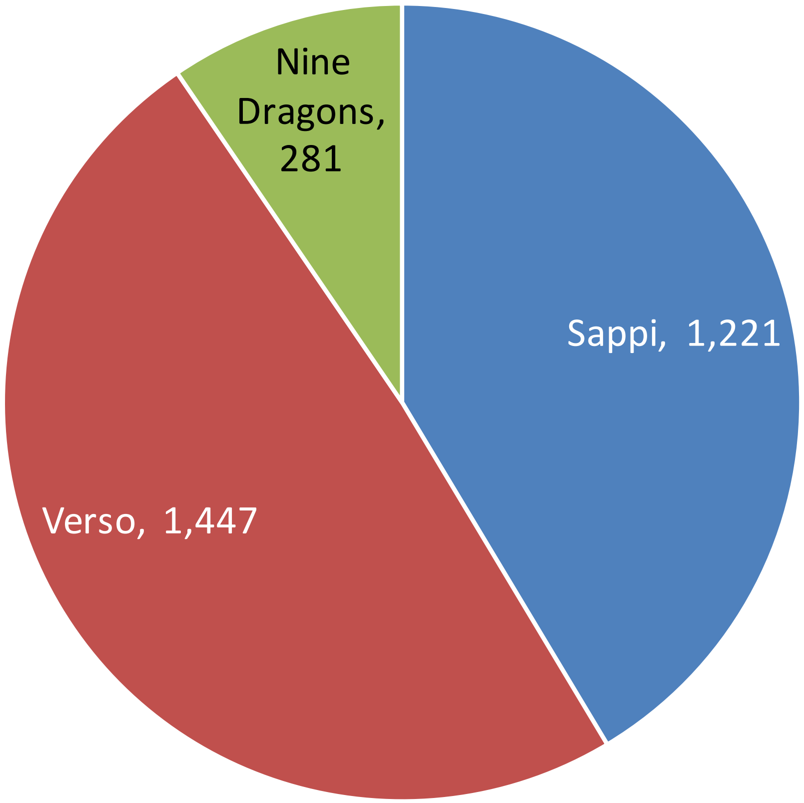
NA Capacity Share by Producer – Coated Freesheet

1997



6.4 million tons

Current



2.9 million tons

Source: RISI

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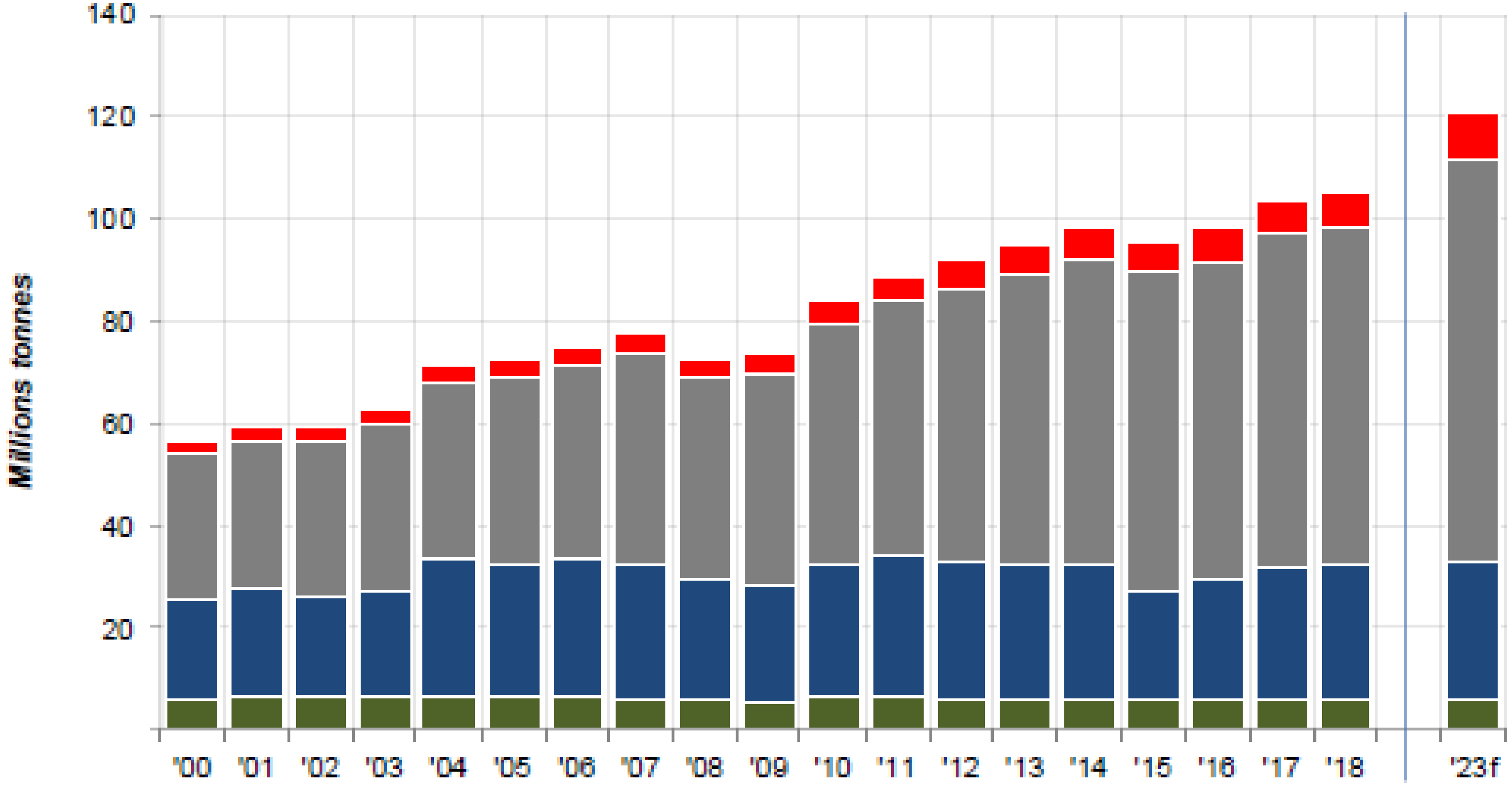
Global Textile Fiber Demand



CAGR 2018 - 23

Total Fiber: +3%

Wood based: +5%

Synthetic: +4%

Cotton: +1%

Other: +0%

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Wood based fibers - the natural choice

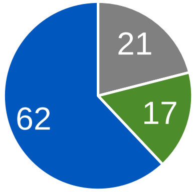
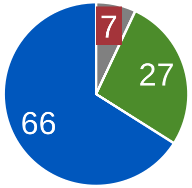
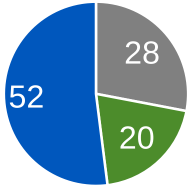
-biodegradable
-compostable
-recyclable
-renewable

Cellulosic fibre properties helping drive growth

✓✓ Key strength ✓ Qualifies ✗ Issue

■ Nonwovens/Technical textiles ■ Home textiles ■ Apparel

Fibre properties and applications

		Cellulosic fibres	Cotton	Polyester
Applications				
Function and feel	Durability	✗	✓	✓✓
	Absorbency	✓	✓	✗
	Breathability	✓	✓	✗
	Softness	✓	✓	✓
	Drape	✓	✗	✗
Appearance	Dyeability	✓✓	✓	✓✓
	Brightness/Lustre	✓✓	✓	✓
Sustainability	Renewable and biodegradeable	✓✓	✓✓	✗
	Resource efficiency	✓✓	✗	✗
Overall value proposition		• Natural and attractive, ‘greener’ alternative to cotton	• Natural, functional and well established	• Cheap, durable and versatile

- On a pure property basis, cellulosic fibres are superior to cotton and differentiated on sustainability.
- Polyester is differentiated on strength/ durability versus cotton and cellulosic fibres.

Source: IHS Global, RISI, Hawkins Wright.

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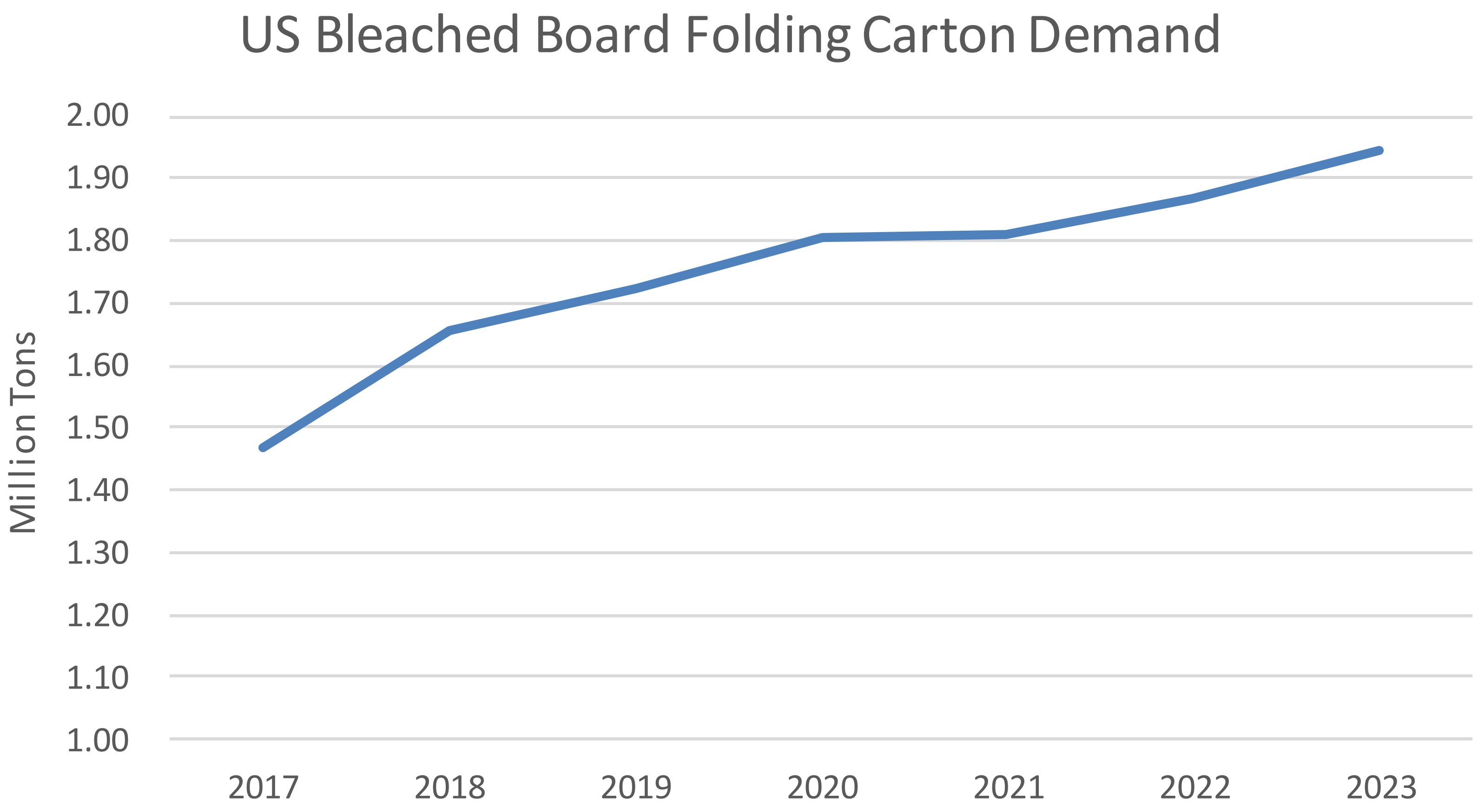
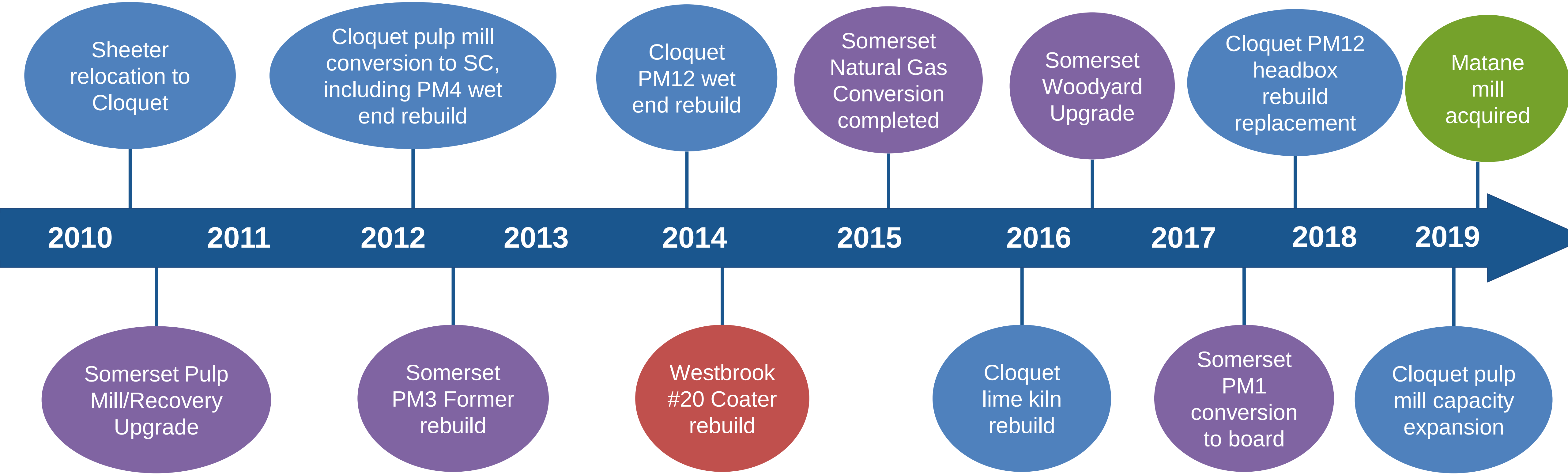
Folding Carton Demand Forecast



Sappi has shifted one Somerset machine from declining coated freesheet market to growing folding carton boxboard market

Sappi North America History of Investment



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Strategic Priorities by Business

Graphics
Optimize

- Scale
- Pulp integration

Packaging
Establish and Grow

- Share and scale
- Pulp integration
- Barrier coating

DWP
Grow with Customers

- Cost competitiveness
- Sustainability

Release
Shift from China garment industry

- Functional textures
- Pulp integration

Bio-Business
Launch

- Biomaterials
- Sugars to biochemicals

Legacy Packaging

LusterPrint

Bag applications
Pet food, theater popcorn
Seed pack, coffee bag

LusterCote

Litho label
Cut & Stack
Yogurt banderole

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PaperBoard

Spectro

- High Bright
- Luxury Packaging
- Commercial Printing

Proto

- Folding Carton
- Litho Lamination

LusterFSB

- Food Service
- Cup
- Plate/Bowl

Development

Invented Ultracast technology. This launched the industry standard, the only release paper capable of 100% pattern transfer for the casting industry.

1979

Developed and patented high solids blade coating technology

1978

Modified a paper machine for in-line coater and soft calender

1970

First high bulk to weight coated paper–Warrenflo

1965

Developed and patented the automatic finishing machine for sheeting paper and stacking in-line

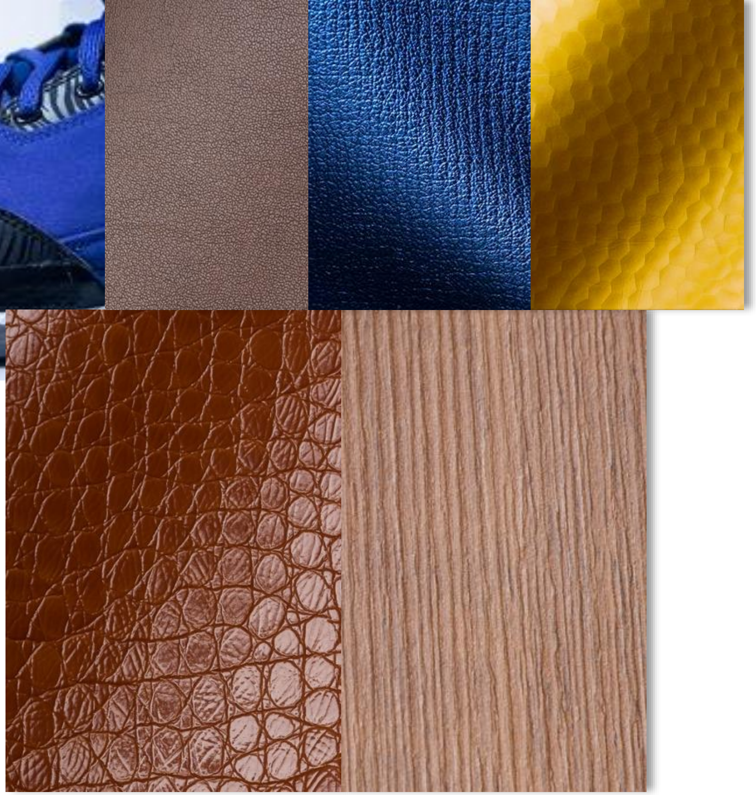
1958

Developed in-line resilient roll calendering

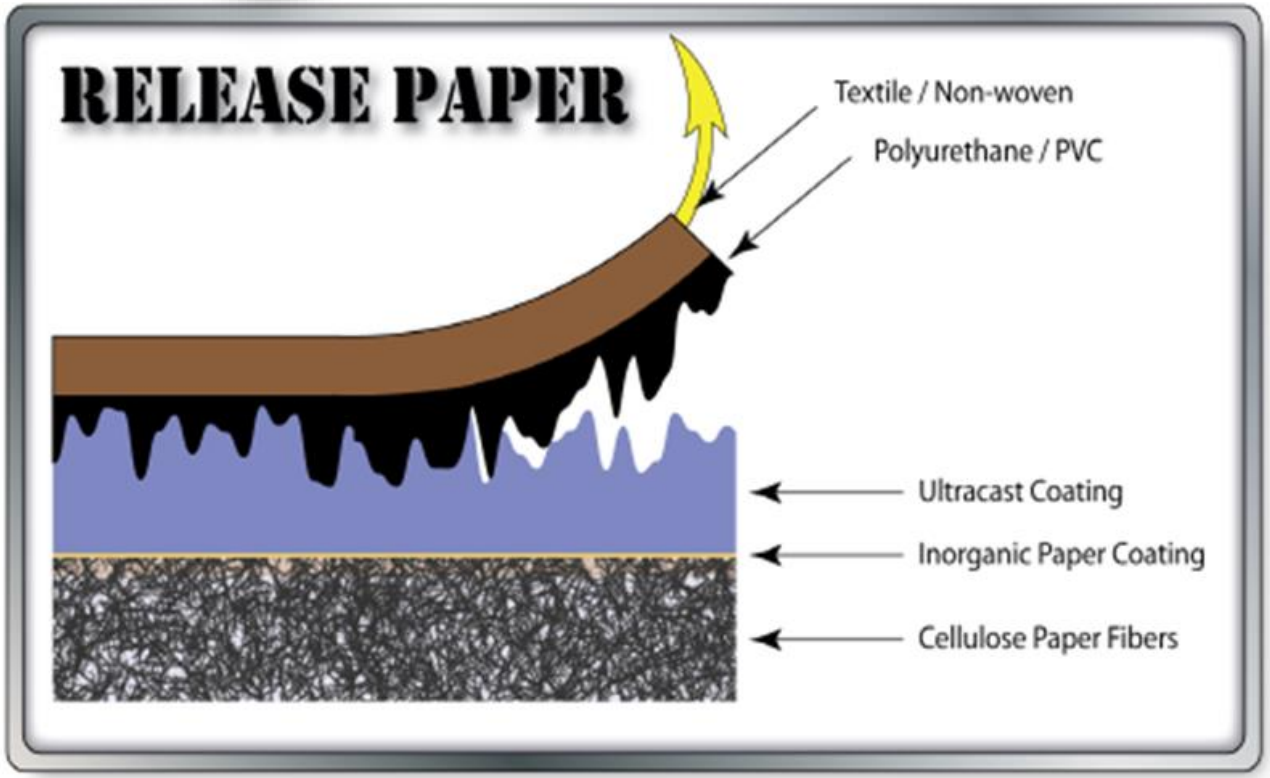
1980

Developed Ultracast (ability to impart high fidelity micro-textures on paper)

Release Papers
Westbrook Mill



Leather Upholstery – Auto Interiors – Handbags – Counter Tops – Laminate Cabinets – Flooring – Shoes Sport Shoes – Car Wrap – Pads & Foams – Motorcycle Seats

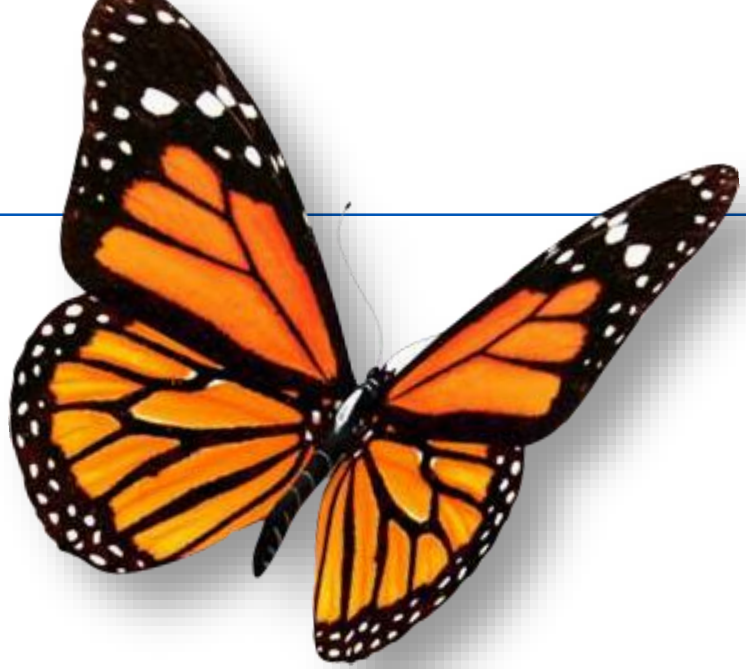


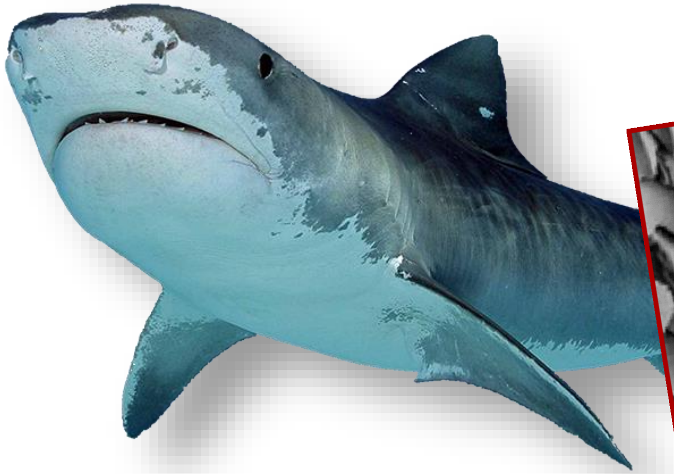
Every day, almost everyone here today touches a texture that was created by Sappi's Release Paper Business.

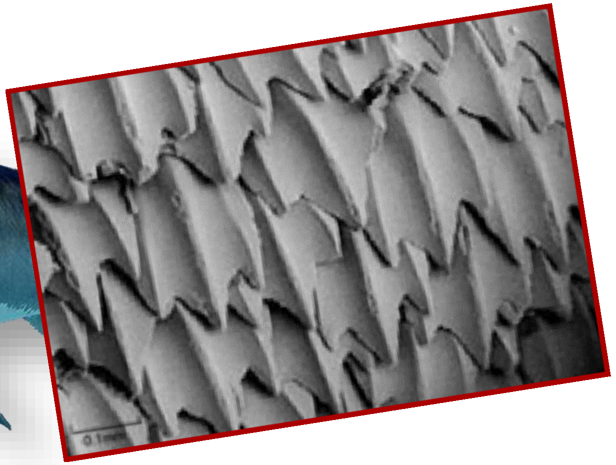
In development ….

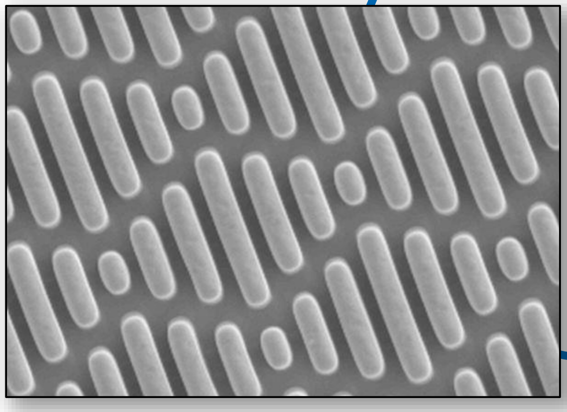
Neoterix™

Microscopic Biomimicry

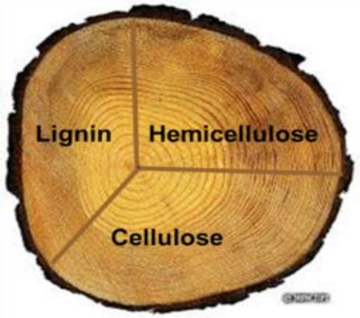


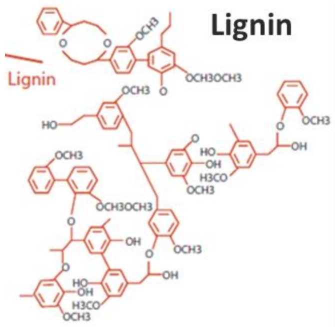






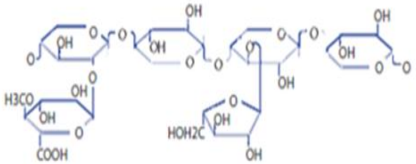
Sappi biotech: entering adjacent value chains



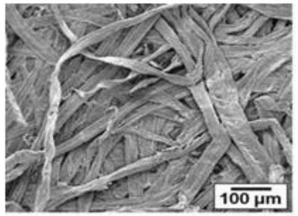


sappi | biotech

Hemi-cellulose

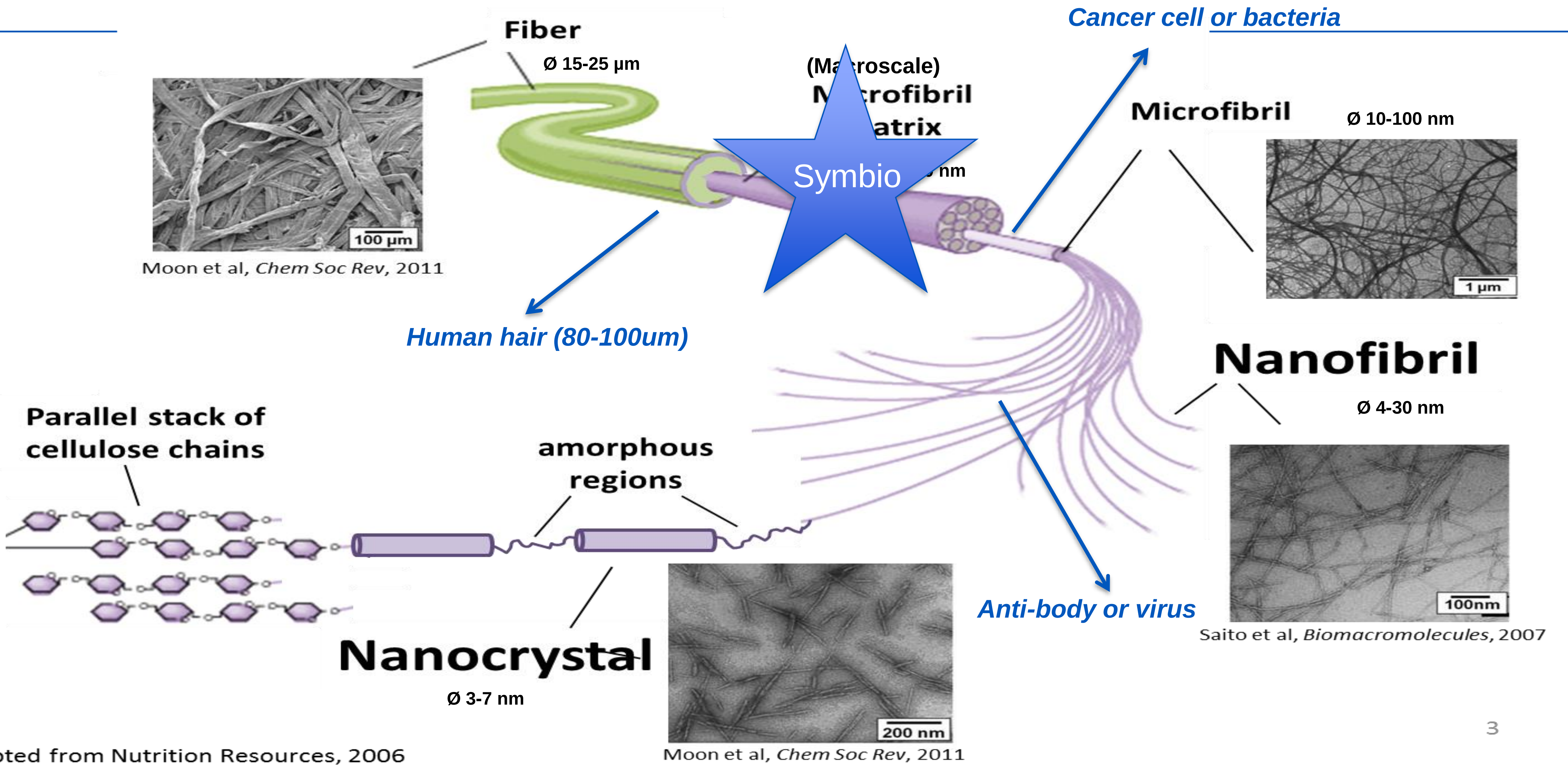


Cellulose fiber



Bio value chains

Cellulose Morphology



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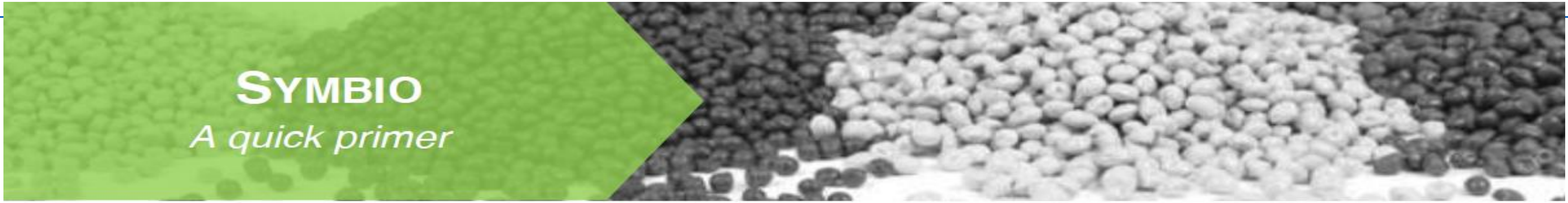
Engineered Fibers



symbio
IN SYMBIOSIS WITH NATURE

Cellulose Plastic composites → Enhanced Cellulose Plastic composites → Cellulose Bio-Plastic composites

“Commodity” Plastic products	Higher end Plastic products	Replacing Petro-based

2

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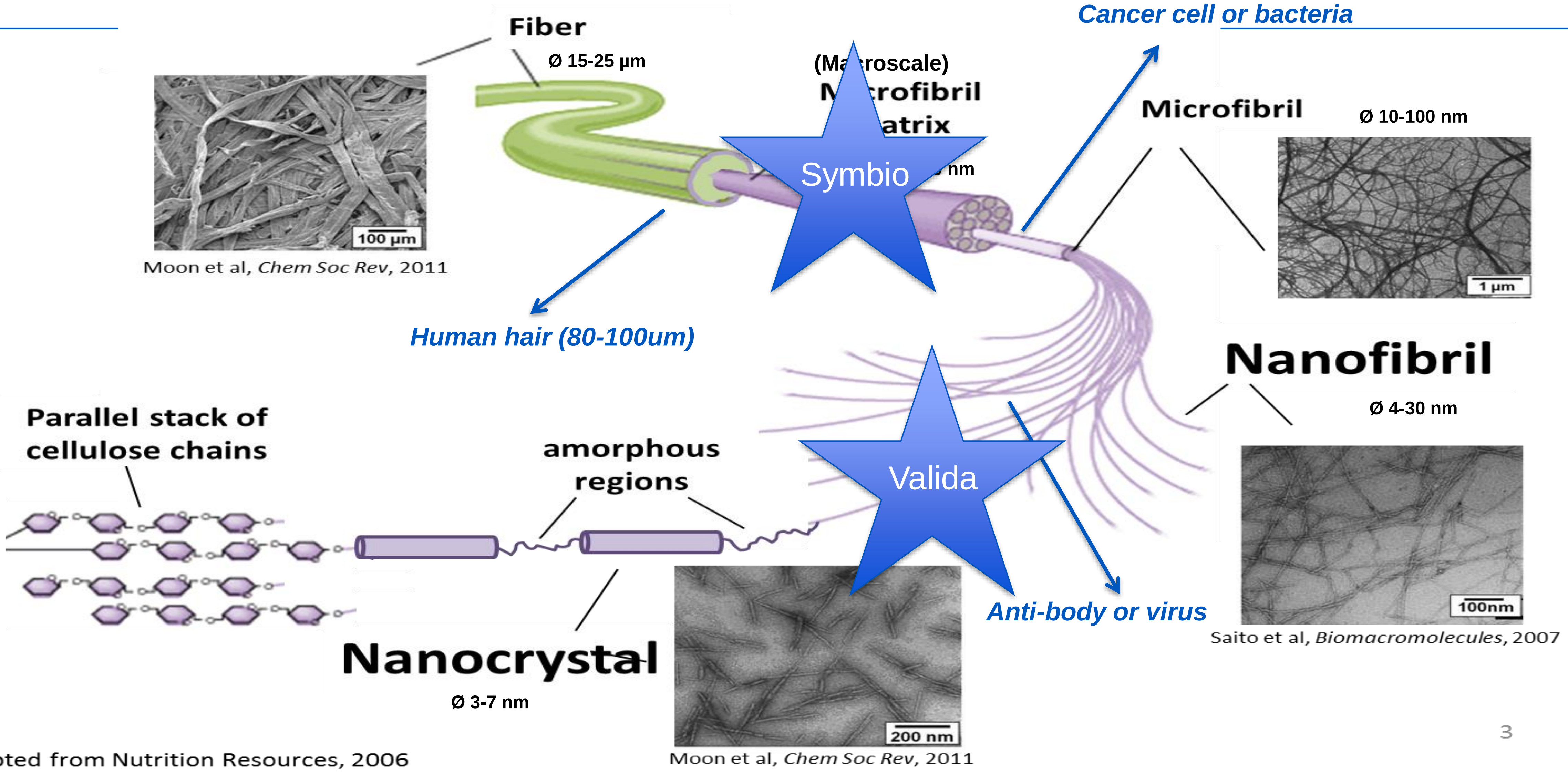
Cellulose Morphology



Valida Applications

Biobased composite
Improving the mechanical properties of rubber, latex, thermosetting resins, soy protein and starch-based matrices

Paper
Improve paper strength

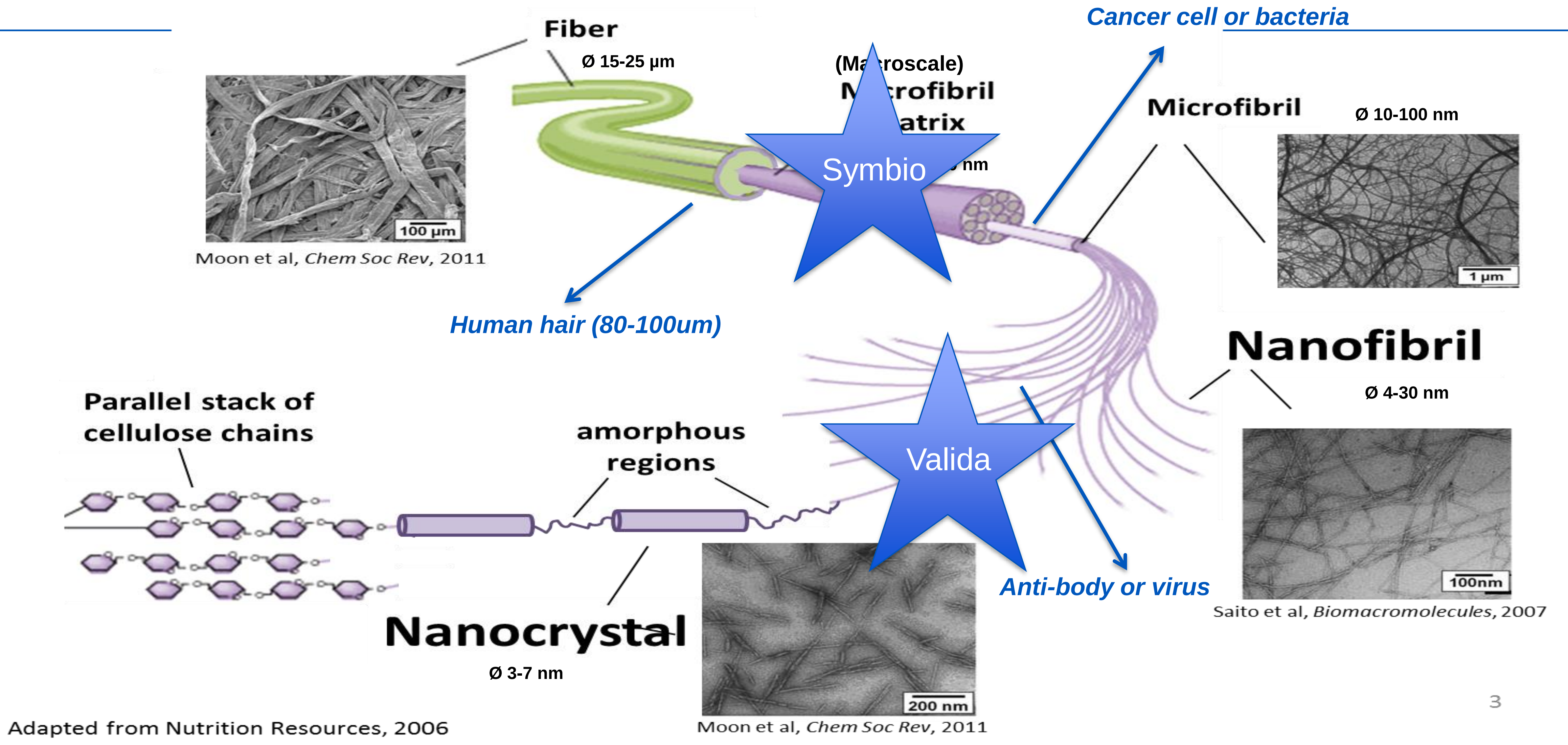
Paint and adhesives
Thickening, stabilising

Packaging and barrier
Enhancing barrier coatings on packaging materials to prolong shelf life of food

Cosmetics
A powerful and natural rheology modifier in personal care products

Food
Effective rheology modifier and active ingredient release

Cellulose Morphology



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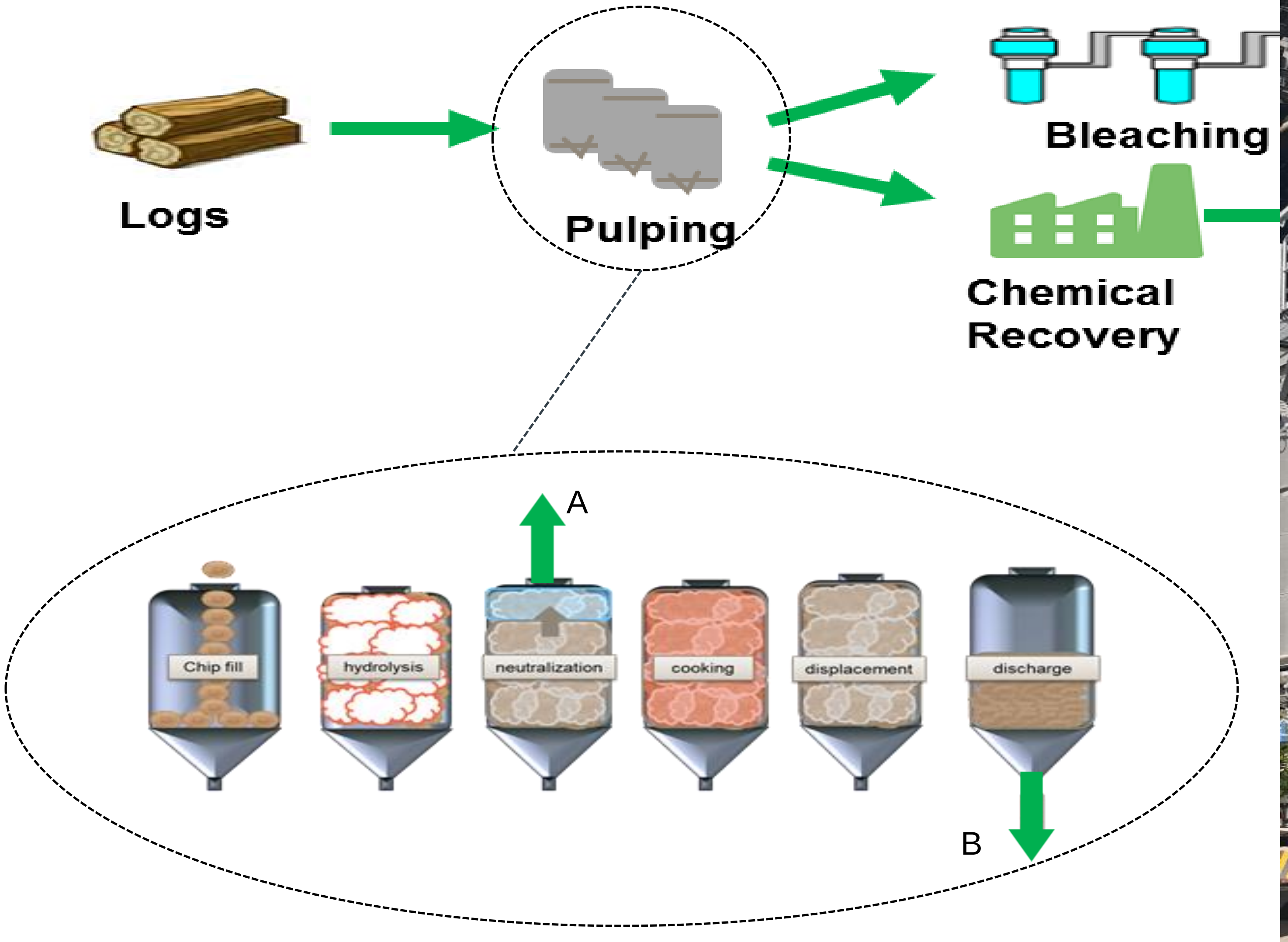
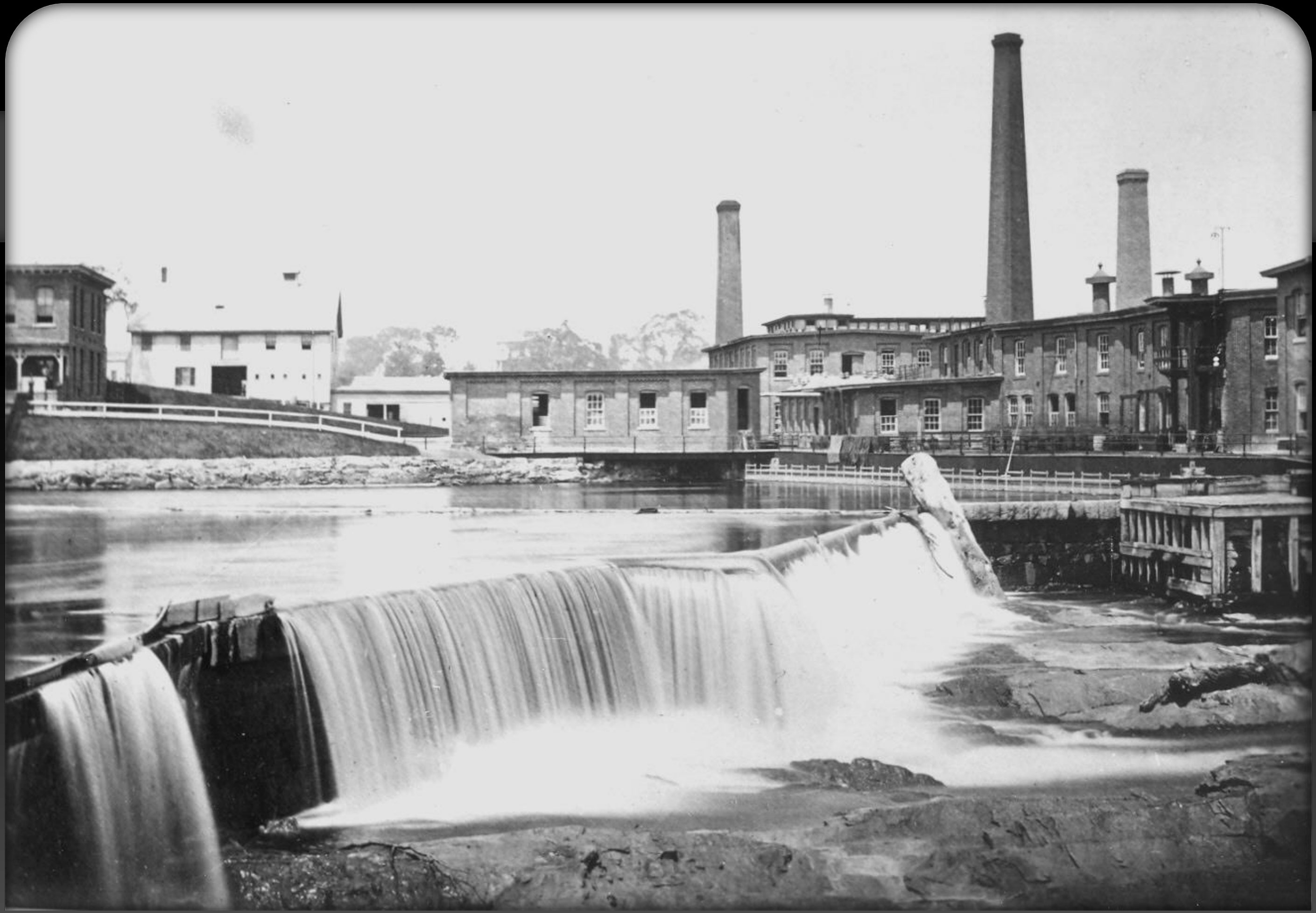
Sugars to biochemicals – Sappi Demonstration



EVOLUTION

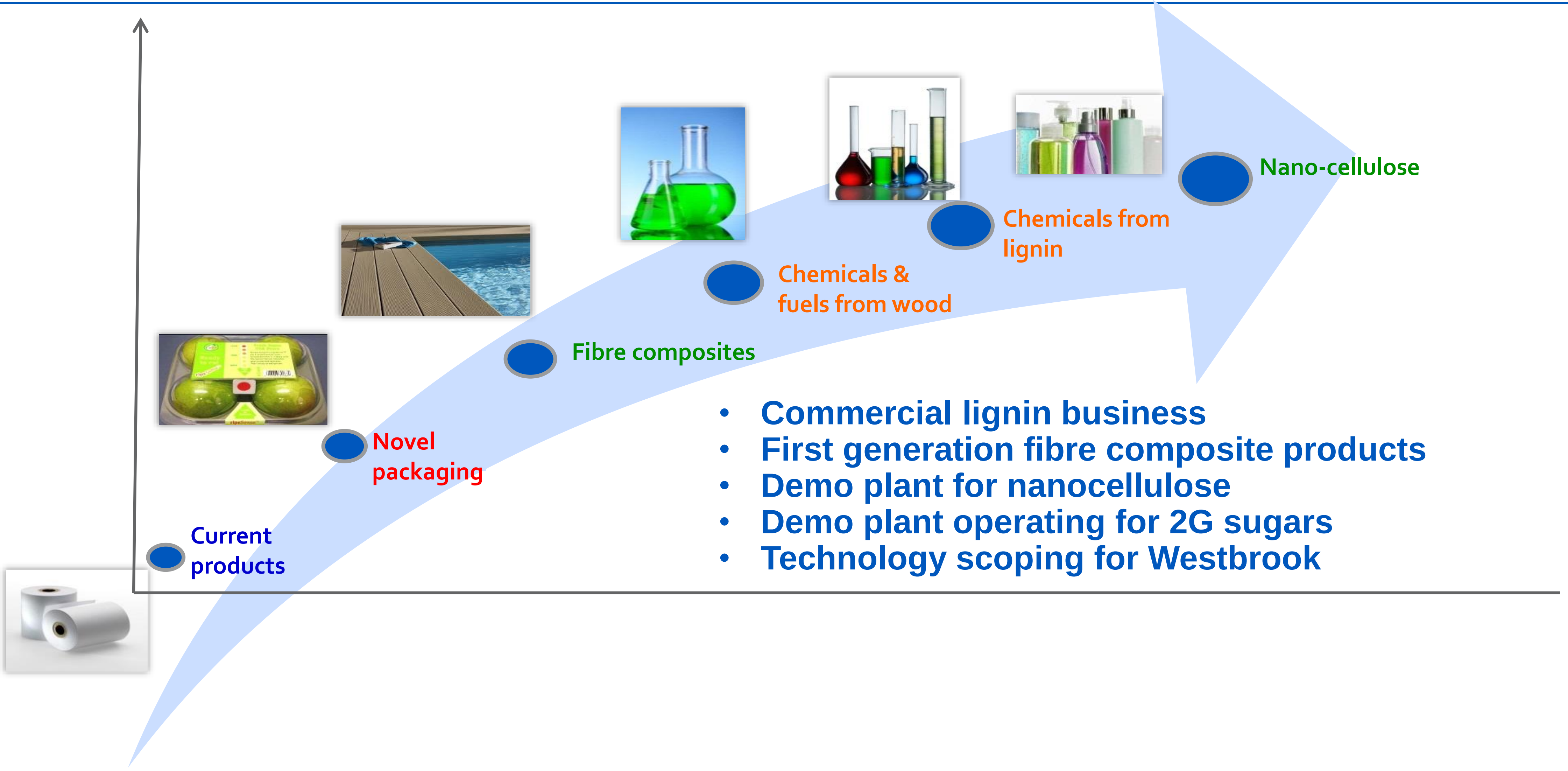
Samuel D. Warren purchases Cumberland Mills and a long history of development begins

1854



Mill Exterior ca. 1880

Sappi Biomaterials Pipeline



- Commercial lignin business
- First generation fibre composite products
- Demo plant for nanocellulose
- Demo plant operating for 2G sugars
- Technology scoping for Westbrook

One thing I hope you take away ….

- Two most abundant polymers on earth – cellulose and lignin – both renewable
- Chemistry, Biochemistry & bio-engineering have advanced in ways we can modify these wood polymers for higher value

- Social momentum toward more sustainable material use
  - Paper for plastic
  - Bio forms of chemicals vs. fossil fuel based
  - Process sustainability

- Educate today's youth on the vast opportunities in the forest products industry
  - We must step up our game

Thank you