Spiber Inc.

Brewed Protein™

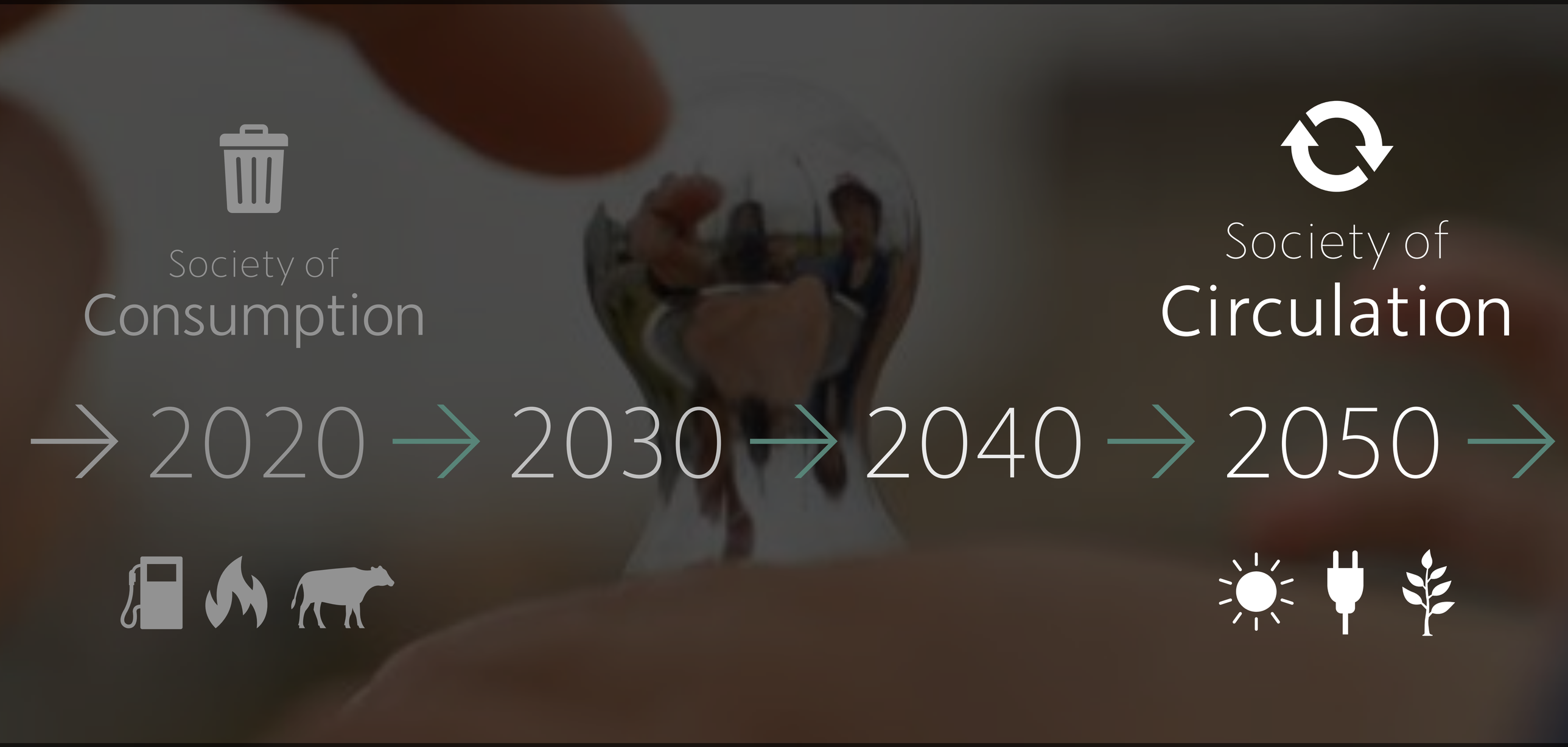
expanding the range of sustainable materials

Founded: September 26, 2007
Headquarters: Tsuruoka, Japan
Team size: >270 members (Consolidated)

Equity funding: 60 billion JPY
Debt funding: 40 billion JPY

TSURUOKA SCIENCE PARK

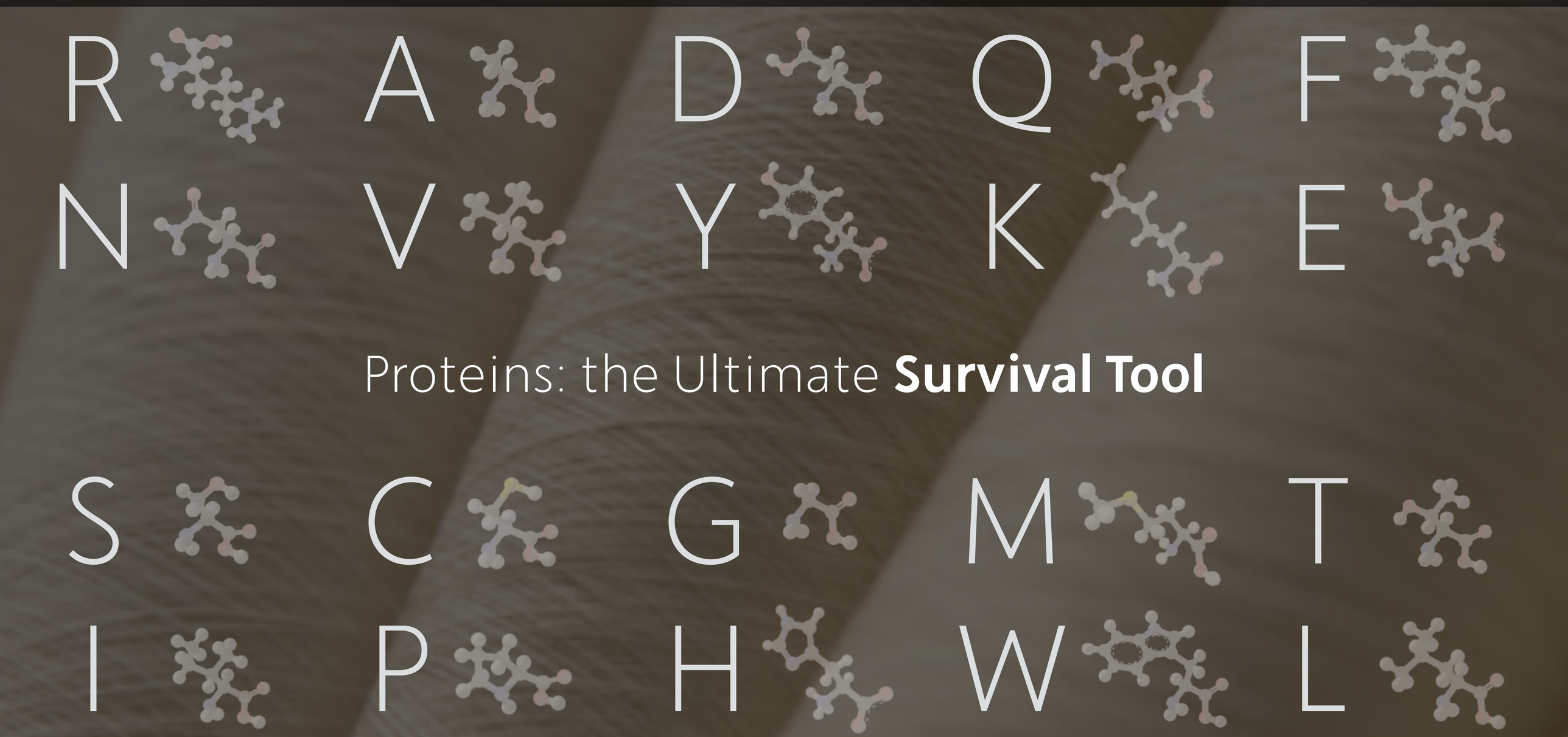
Long term vision



Society of
Consumption

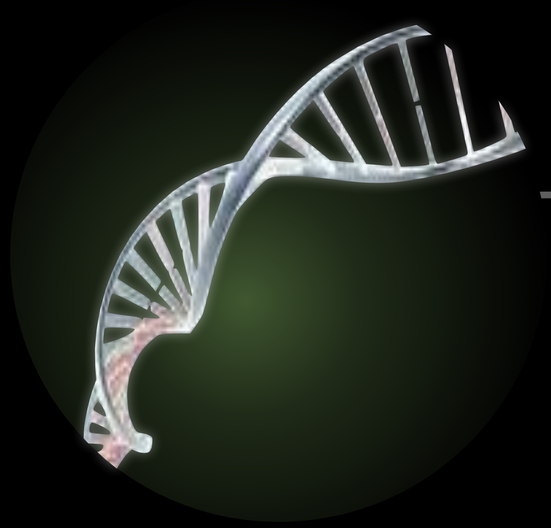
Society of
Circulation

→ 2020 → 2030 → 2040 → 2050 →



Proteins: the Ultimate **Survival Tool**

THE PROGRAM: DNA



THE RAW MATERIAL: SUGARS

THE FACTORY: CELLS / MICROBES

THE OUTPUT: BREWED PROTEIN™

Brewed Protein™ fabrics

Expanding humanity's sustainable material options

✓ Plant-based, Animal Free & Microplastic Free

✓ GHG Emissions Target: Significantly Less than Other Animal materials

As humanity accelerates towards building a more sustainable society, we are forced to reckon with an undeniable fact: we currently have extremely limited options for closed-loop materials that are derived form renewable resources and can be safety returned to the environment through biodegradation.

Brewed Protein™ materials are a revolutionary new solution created through microbial fermentation. These materials are anticipated to serve as a compelling new option for designers and creators and to play a crucial role in laying the foundation for a brighter, more sustainable future.

Spun yarn / Filament

Leather / Suede

Fur / Fleece

Goldwin

PANGAIA

Other Applications

Auto / Aerospace (Seat fabrics, CFRP)

Medical (Ligaments, artificial hair, polyketide)

Cosmetics (Mascara, micro-beads)

Food (Meat analogues)

Construction (Cellulose composite)

And more…

Production Expansion

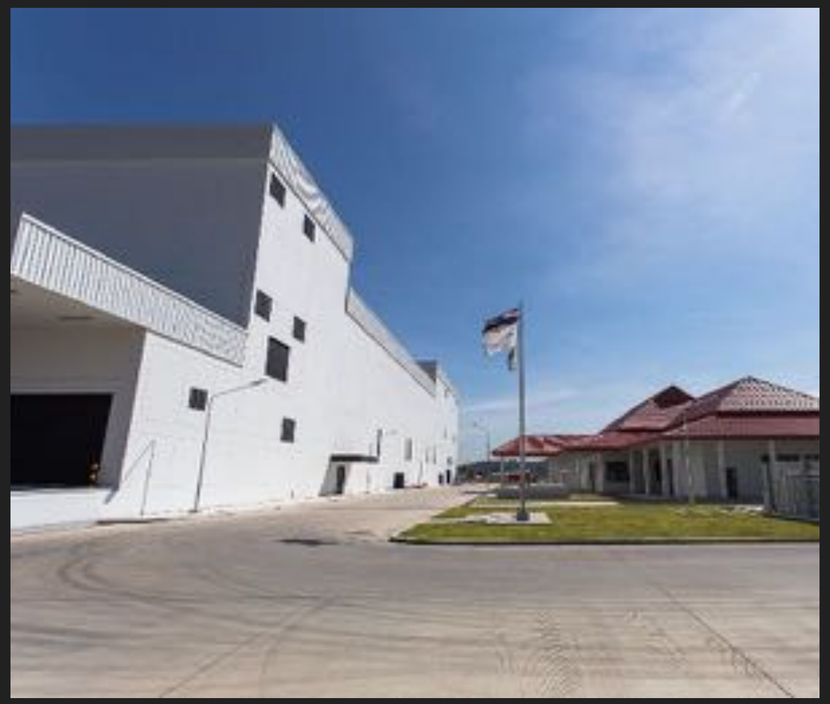
Pilot Facility

Japan

Single digit tonnes/year

▶

Mother Plant



Thailand

Hundreds tonnes/year

▶

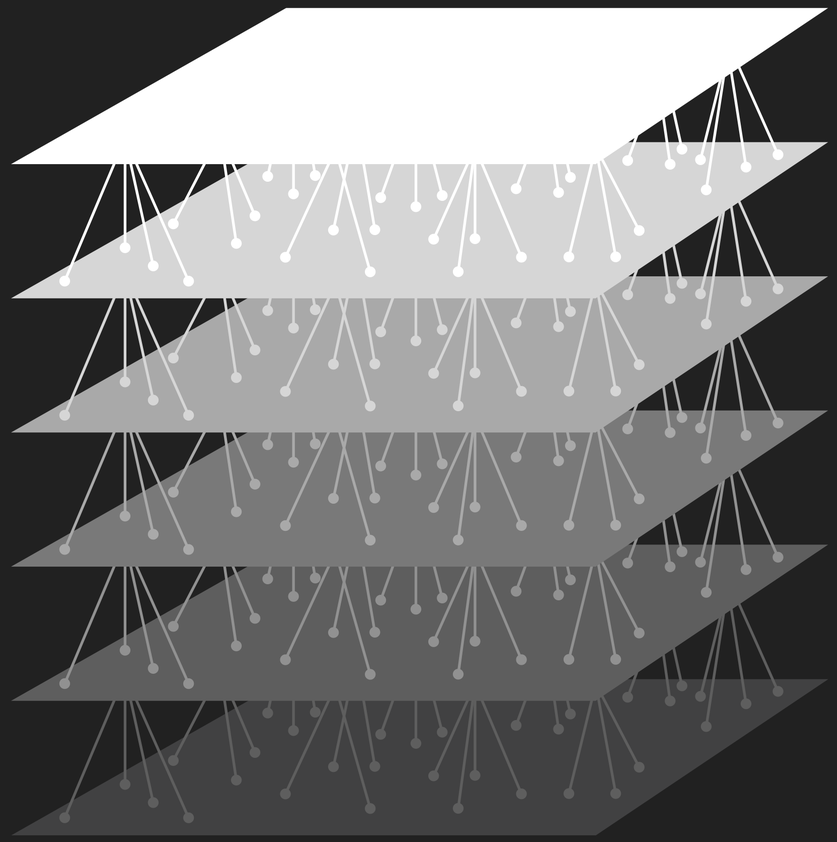
Commercial Plant

USA

Thousands tonnes/year

(In partnership with ADM)

Fully Integrated Biodesign & Production Platform for Protein-based Material Solutions



Molecular Design (Bioinformatics, AI, GA, etc.)

Host Design (Synthetic Biology, Molecular Biology, etc.)

Fermentation (Metabolic Engineering, etc)

Refining (Organic Chemistry, etc.)

Materializing (Polymer Science, Rheology etc.)

Composite Molding (Material Science, etc.)

LEARNING FROM NATURE

Sample Collection

Genetic sequence analysis

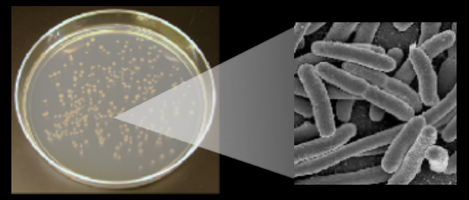
Physical property analysis

Integrated database

GENE EVOLUTION CYCLE

New gene design utilizing integrated database

Artificial gene synthesis



Insert synthetic DNA into microbes

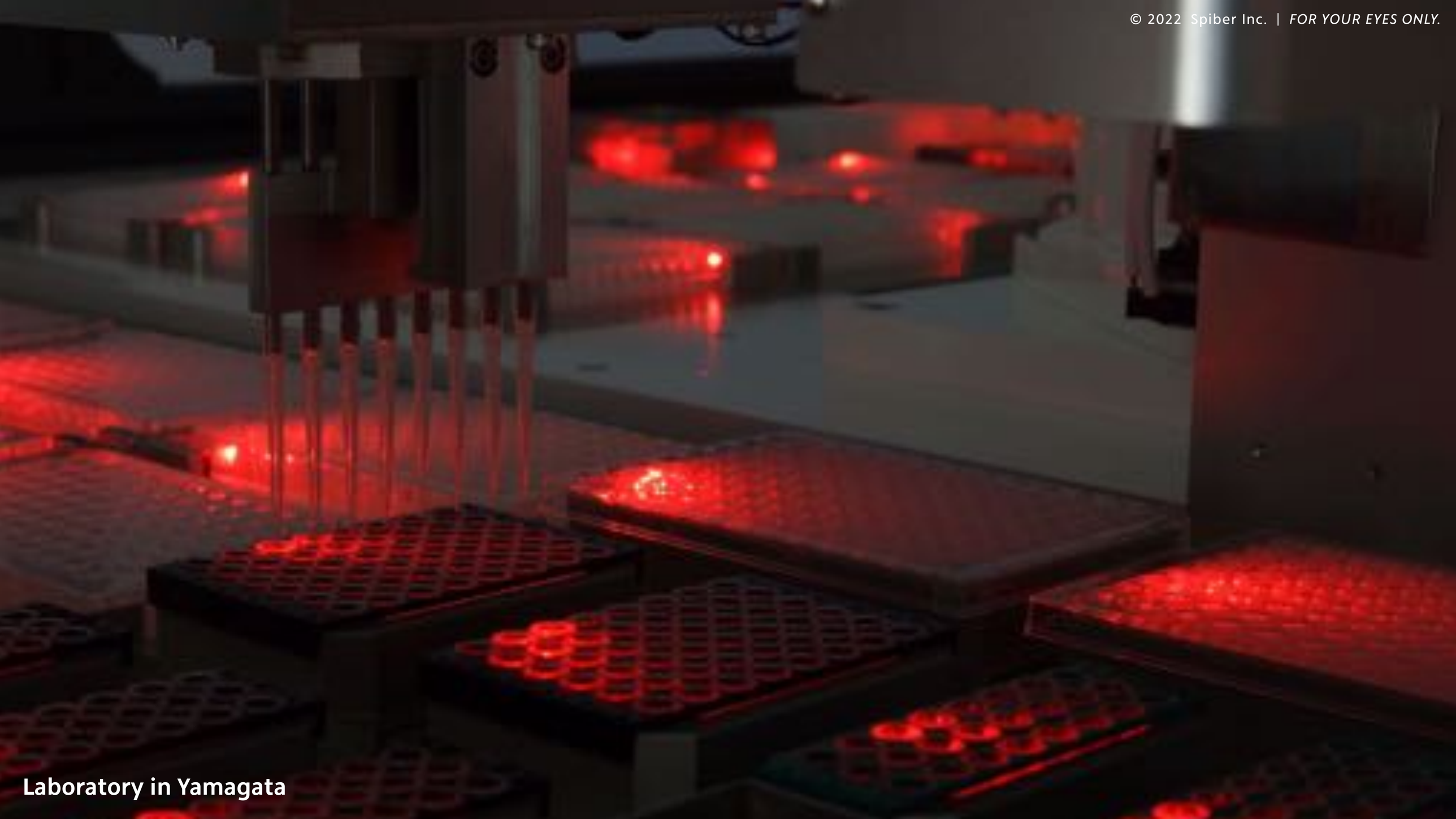
Integrated database

Accumulate **high quality** big data

Produce protein polymers through fermentation

Refine protein polymers

Synthesize materials

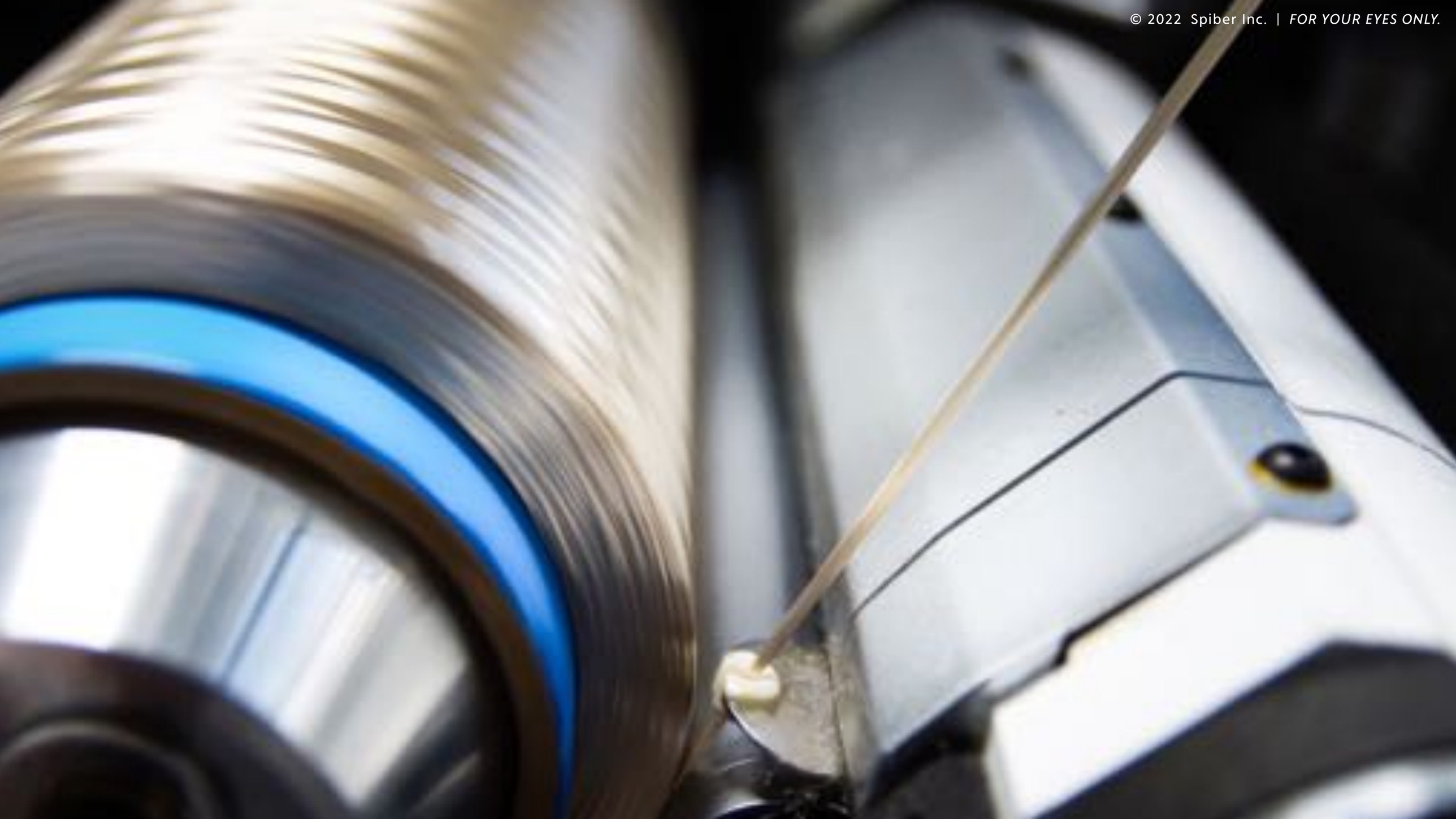


Laboratory in Yamagata

Laboratory in Yamagata

Laboratory in Yamagata

Pilot fermentation facility in Yamagata



TC > ISO/TC 38

ISO 2076:2021

Textiles — Man-made fibres — Generic names

ABSTRACT PREVIEW

This document defines the generic names used to designate the different categories of man-made fibres, based on a main polymer, currently manufactured on an industrial scale for textile and other purposes, together with the distinguishing attributes that characterize them. The term "man-made fibres" has been adopted for those fibres obtained by a manufacturing process, as distinct from materials which occur naturally in fibrous form.

This document gives recommendations of rules for the creation of the generic name (see Annex A).

NOTE These rules have been introduced in the sixth edition of ISO 2076, and thus, they are not applicable to the existing generic names of the previous editions.

GENERAL INFORMATION

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Ref: https://www.iso.org/standard/79685.html?browse=tc

Value Securitization

Package assets

Evaluate asset value based on business value

Securitization backed by the assets

Tangible assets
Intangible assets

SECURITIES


Spiber