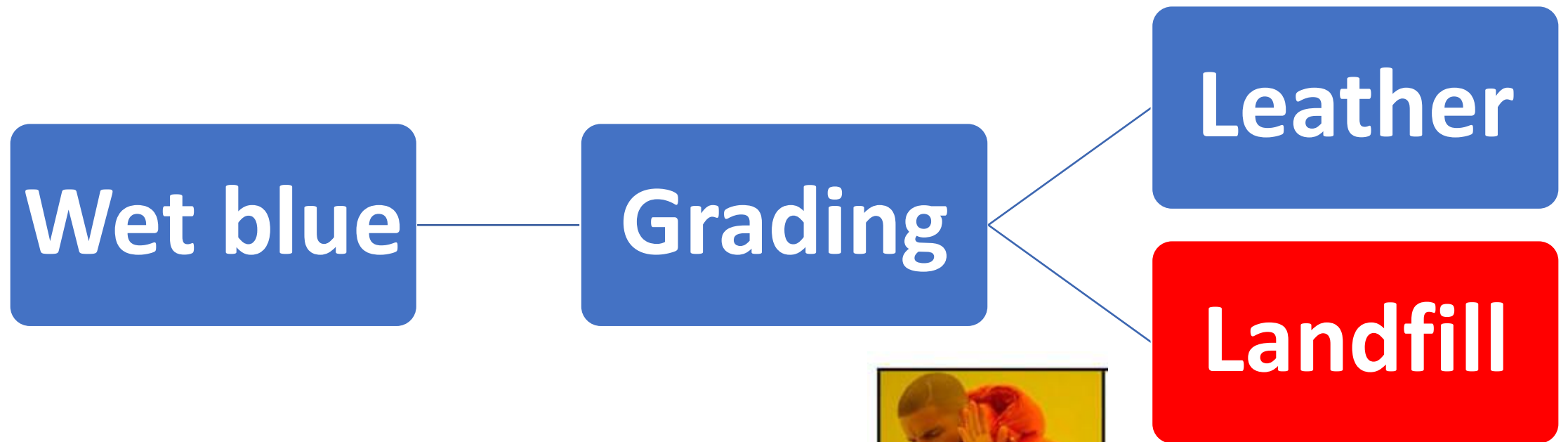# Towards the Real-time Assessment of Staling in Bovine Hides with Hyperspectral Imaging

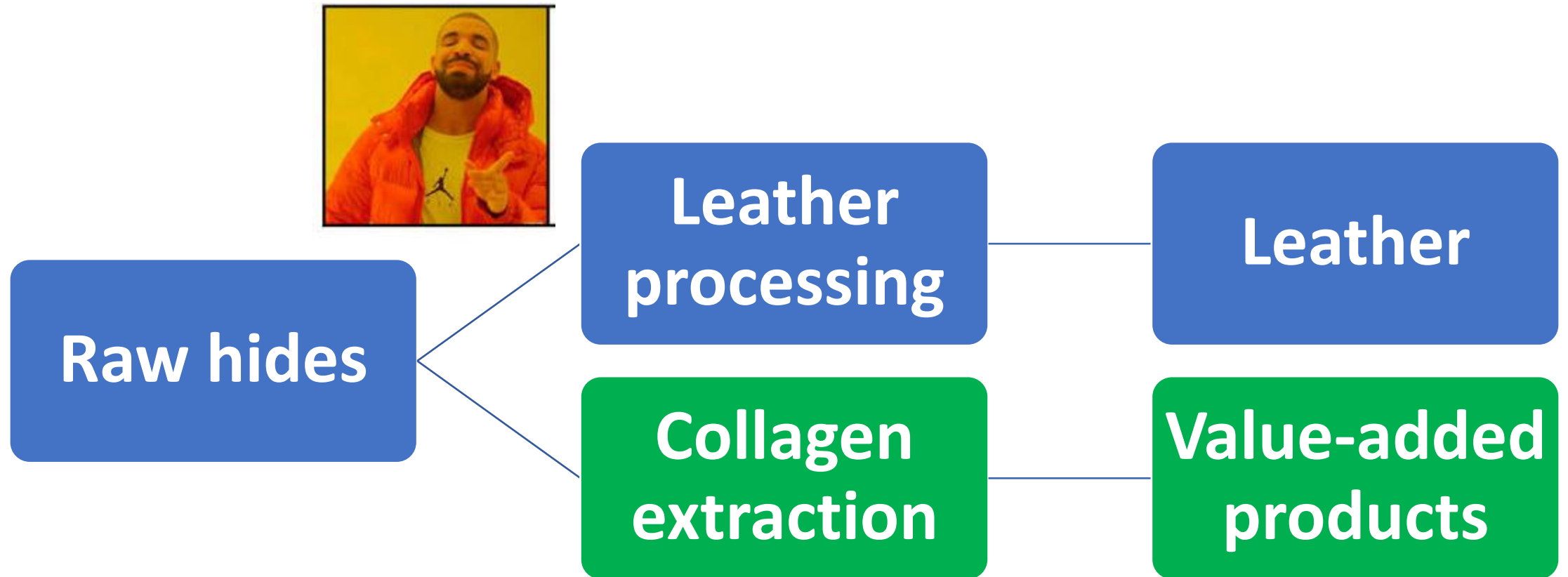**John LIU**[a,], *Yash DIXIT*[b], *Marlon M. REIS*[b], *Sujay PRABAKAR*[a]

[a] Leather and Shoe Research Association of New Zealand

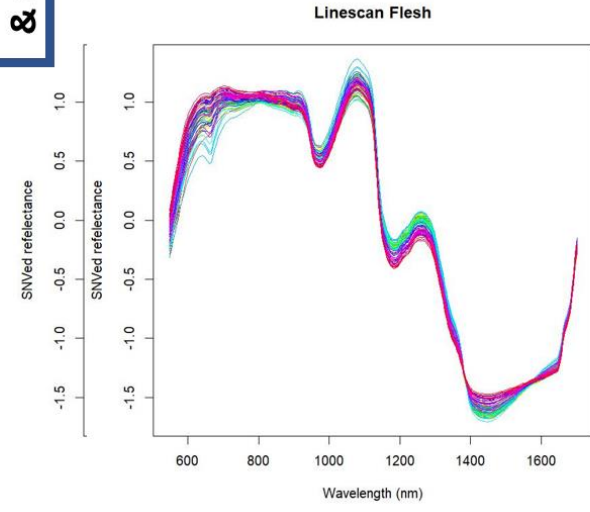[b] Food Informatics, Smart Foods, AgResearch Ltd

Current Practice

Wet blue — **Grading** — **Leather**

Landfill

Proposed Approach

Raw hides → **Leather processing** → **Leather**

Raw hides → **Collagen extraction** → **Value-added products**

Grain

Flesh

Linescan Grain

Linescan Flesh
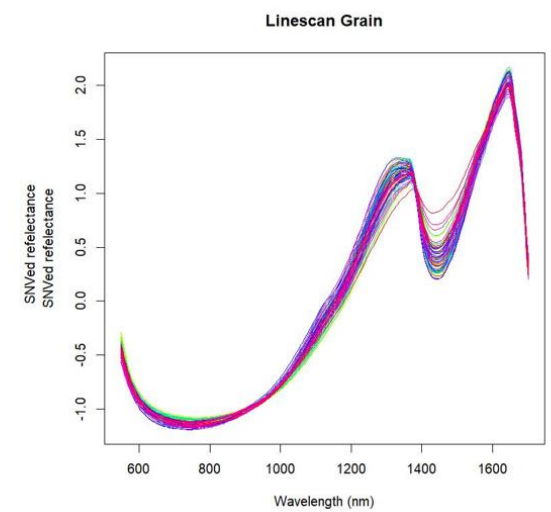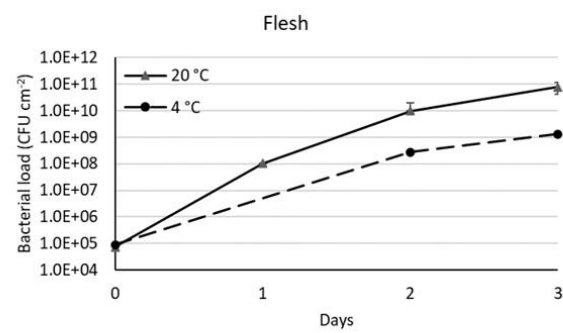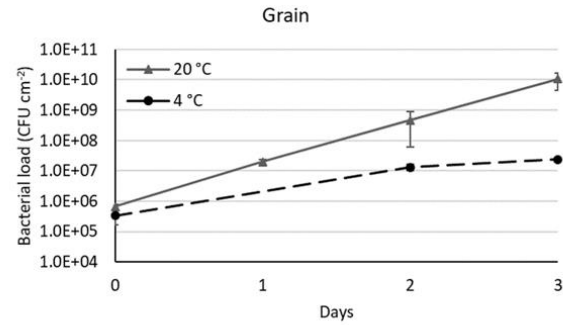
Staling of bovine hide

Microbiological examination

HSI

Leather quality
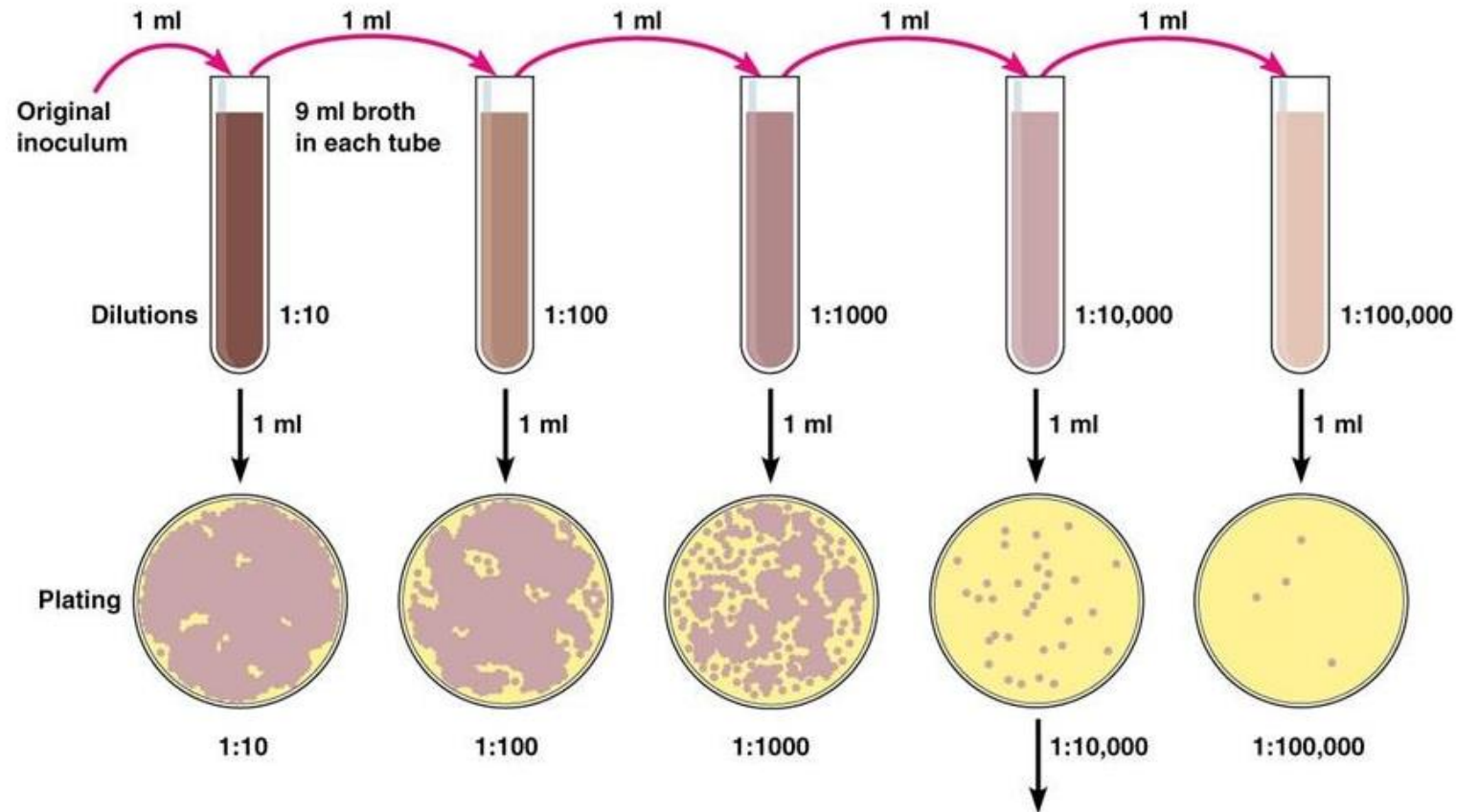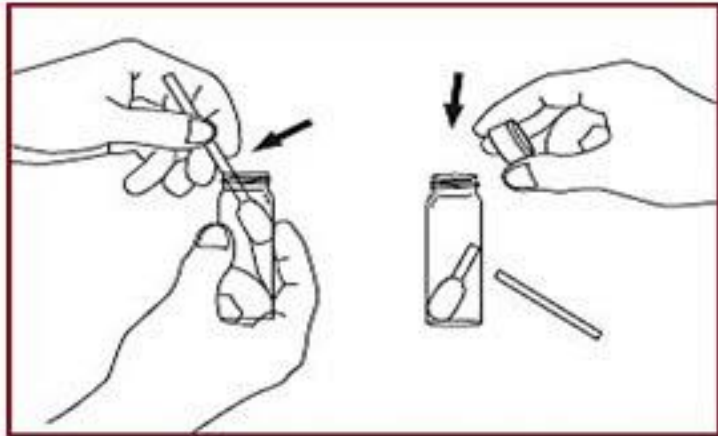
Prediction & Grading

Day 1   Day 2   Day 3

4 °C

20 °C
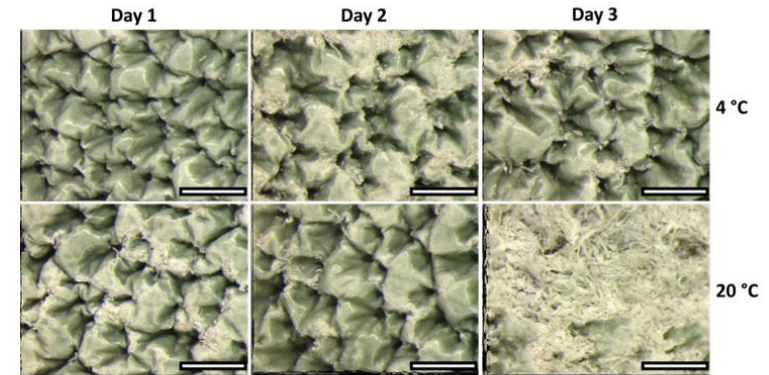
Swab Sampling of Raw Materials

Aerobic Plate Count

Calculation: Number of colonies on plate × reciprocal of dilution of sample = number of bacteria/ml
(For example, if 32 colonies are on a plate of $^1/_{10,000}$ dilution, then the count is $32 × 10,000 = 320,000$ bacteria/ml in sample.)
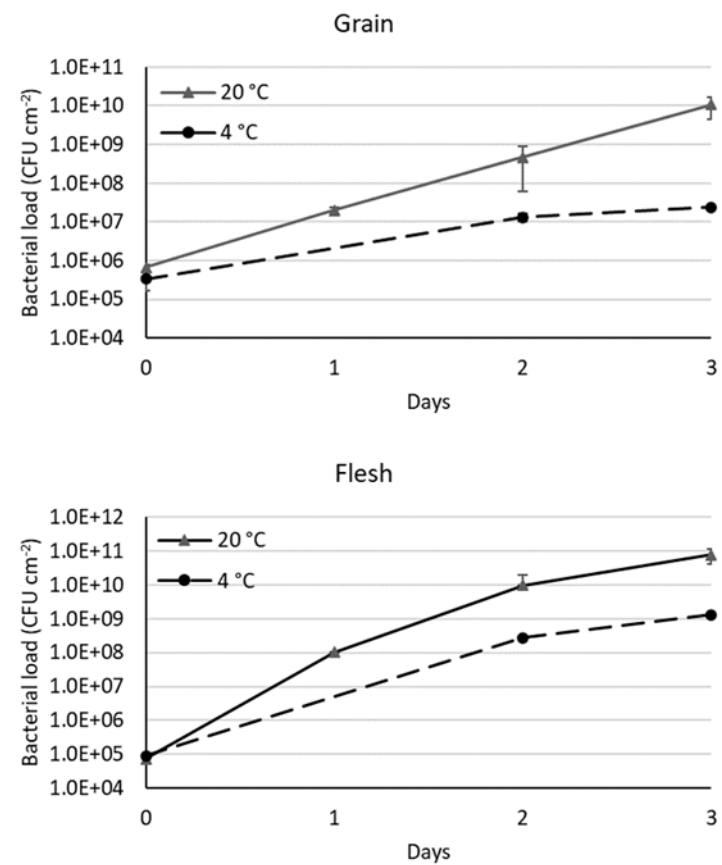
Bacterial Load vs Grain Quality

Figure 1 Aerobic plate counts for grain and flesh sides of hide samples.
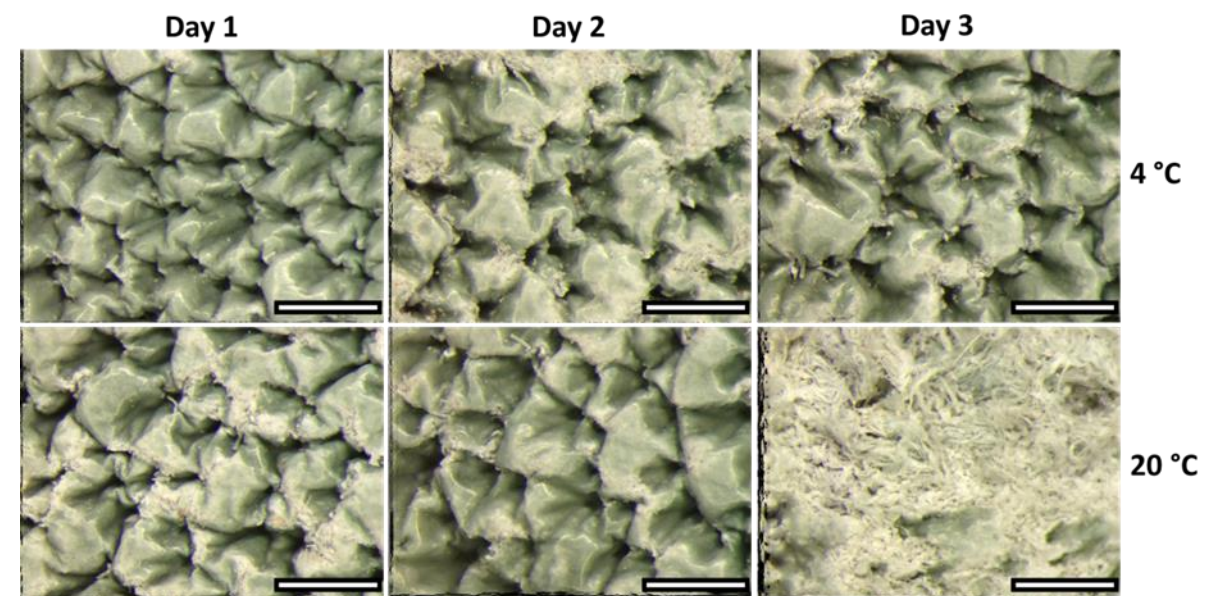

Figure 2 Representative microscopic images of grain surfaces. Scale bar, 0.5 mm