

# Amycel/SpawnMate

- Varieties
- Culture  
Maintenance
- Strain  
Development
- ‘Excalibur’



# Agaricus bisporus Hybrid Varieties

- ▶ White button production worldwide is currently a true monoculture, and all white *Agaricus bisporus* spawn sold in the world is essentially genetically identical
  - ▶ All white strains sold are descendants of U1 developed in the Netherlands in the 1970s
- ▶ There is much more variety in brown production, and there are at least 5 different brown hybrids on the market
  - ▶ 92% of the brown mushrooms grown in the world are Amvcel's proprietary varieties





## Long Term Storage



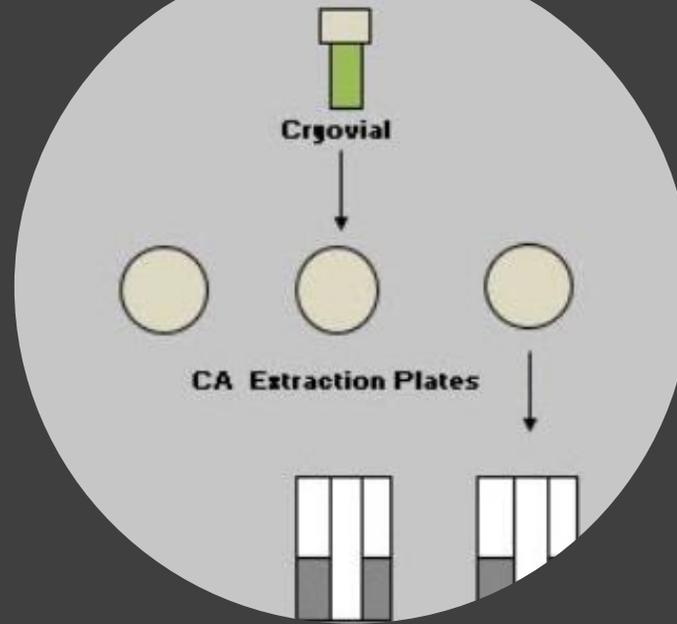
Long term culture storage in Liquid Nitrogen (-196 Celsius)



Primary culture storage in three locations in the USA



Controlled step-down freezing process used to ensure consistency



## Inoculum Production

- Our cultures are woken up (extracted) from long-term storage on a regular schedule and are used to produce inoculum pouches
- Vendome receives these pouches on regular intervals during the year, and uses these to produce bulk inoculum to be used for spawn production
- From the moment the cultures are taken out of liquid nitrogen they must meet rigorous standards of growth and performance

# Inoculum Testing Program

Ln2  
Extraction

Inoculum  
Pouches

Small Scale  
Testing

Commercial  
Scale Testing

Inoculum  
Certification

Release



Small Scale  
Testing

# Inoculum Testing Program



Amycel's strains are maintained as multiple lines



Each extraction of these lines is tested a minimum of 5 times at Amycel's testing facility before release



Performance data is carefully measured by a staff of 9 technicians



Our testing facility is one of the largest in the world



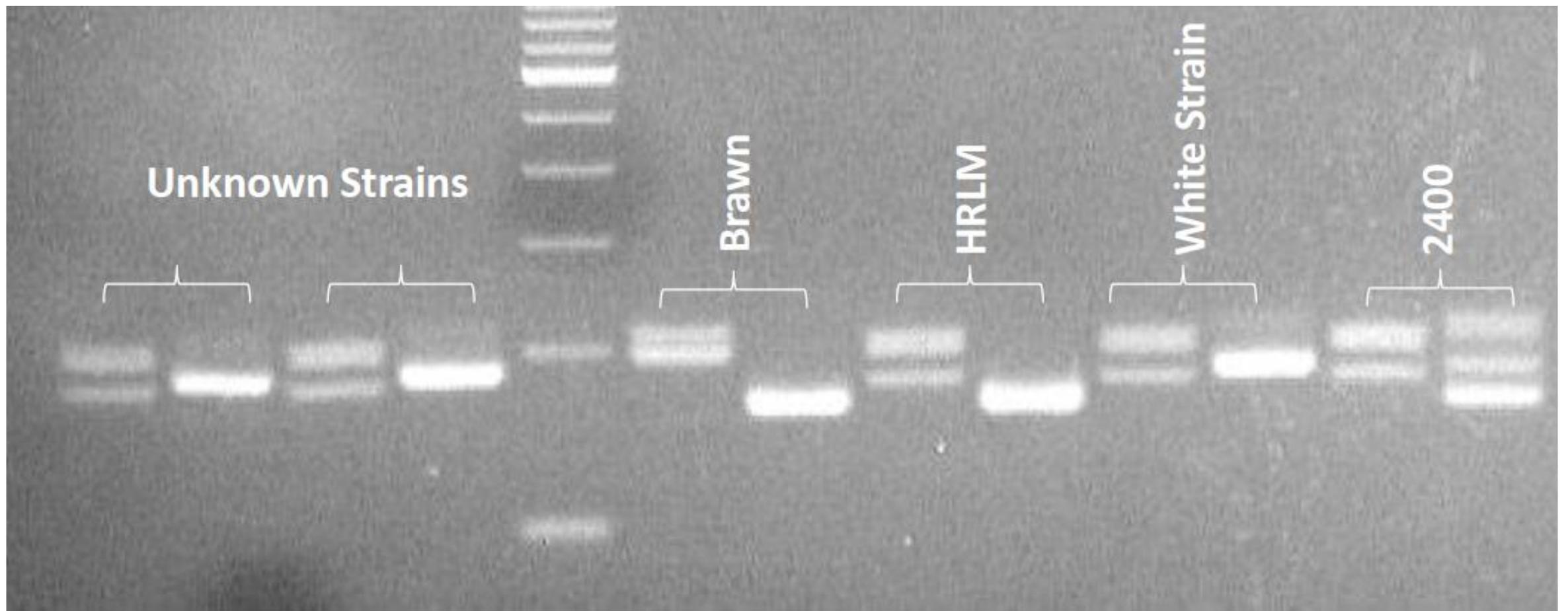
Commercial  
Scale Testing

# Commercial Scale Testing

- All of Amycel's strains are tested in commercial growing environments before the inoculum is released
- Commercial level testing occurs at Monterey Mushroom farms throughout the USA

YEARS

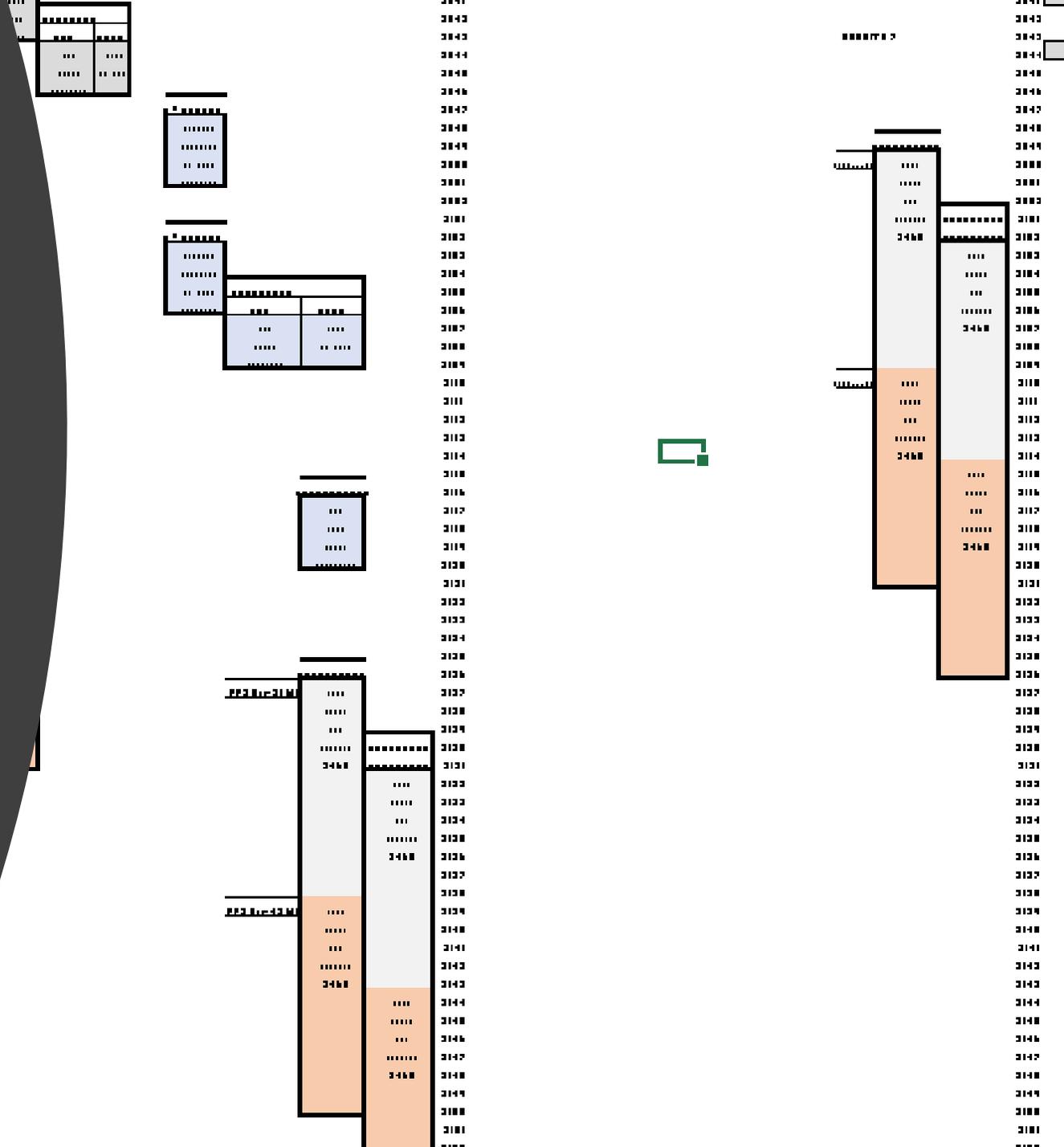




# Microsatellite Fingerprinting of Commercial *Agaricus* Strains

# Inoculum Release

- ▶ Once commercial farm data has been collected and reviewed, the inoculum is released for commercial production
- ▶ Production, shipping, and sales are carefully monitored to be able to react to any performance issues as quickly as possible



# Line Maintenance

Amycel has a dedicated Strain Quality Team which monitors all certification trials, and also screens potential new lines for all of Amycel's strains

New line development is something we take very seriously, and the pipeline is constantly full of new lines to ensure a consistent material sale

We have many new lines coming on board in 2022



# Strain Certification

- Our mother cultures are tested throughout the year to ensure quality and consistency
- Each strain we sell is tested 5-6 times in our small test facility before entering our field-testing program at MMI
- For our patented brown strains, we have parental homokaryons stored as well as the original hybridizations





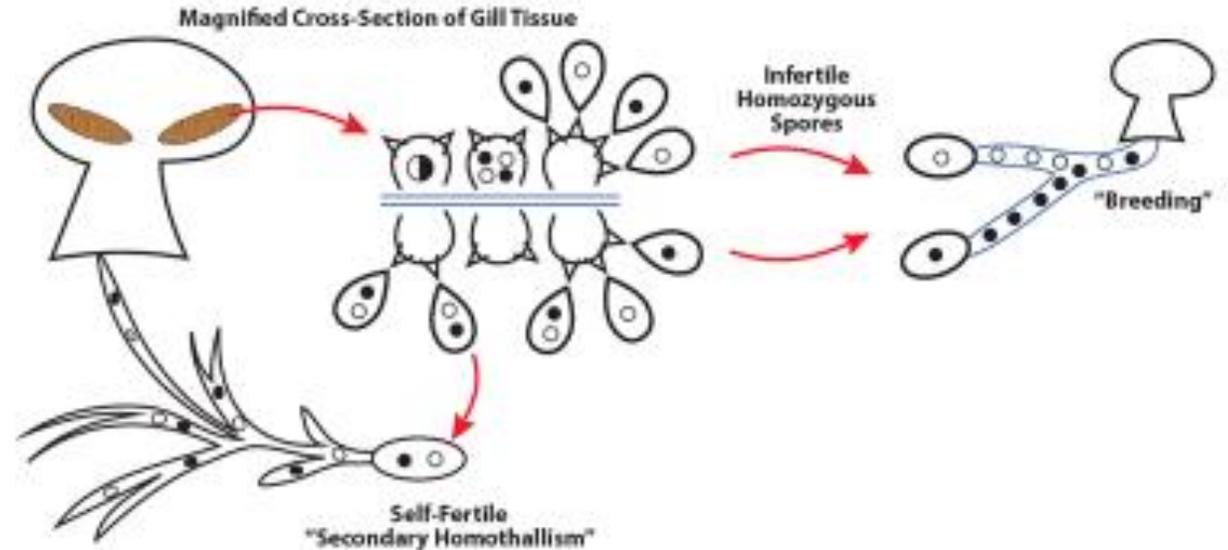
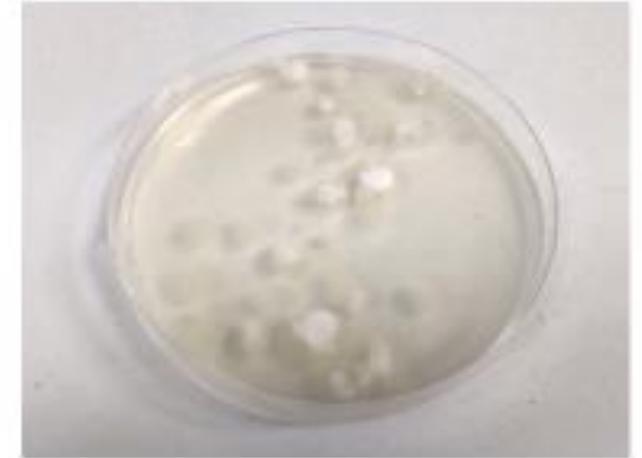




# Hybrids

## Selecting Spores

- Once a mushroom is collected and a spore print is created a technician plates out the spores onto PDA agar
- The spores take about 14 days to germinate and the smallest/slowest colonies are more likely to be homokaryons
- Once these homokaryons are selected genetic analysis is used to determine mating type, color, and other traits





**Homokaryons  
crossing**



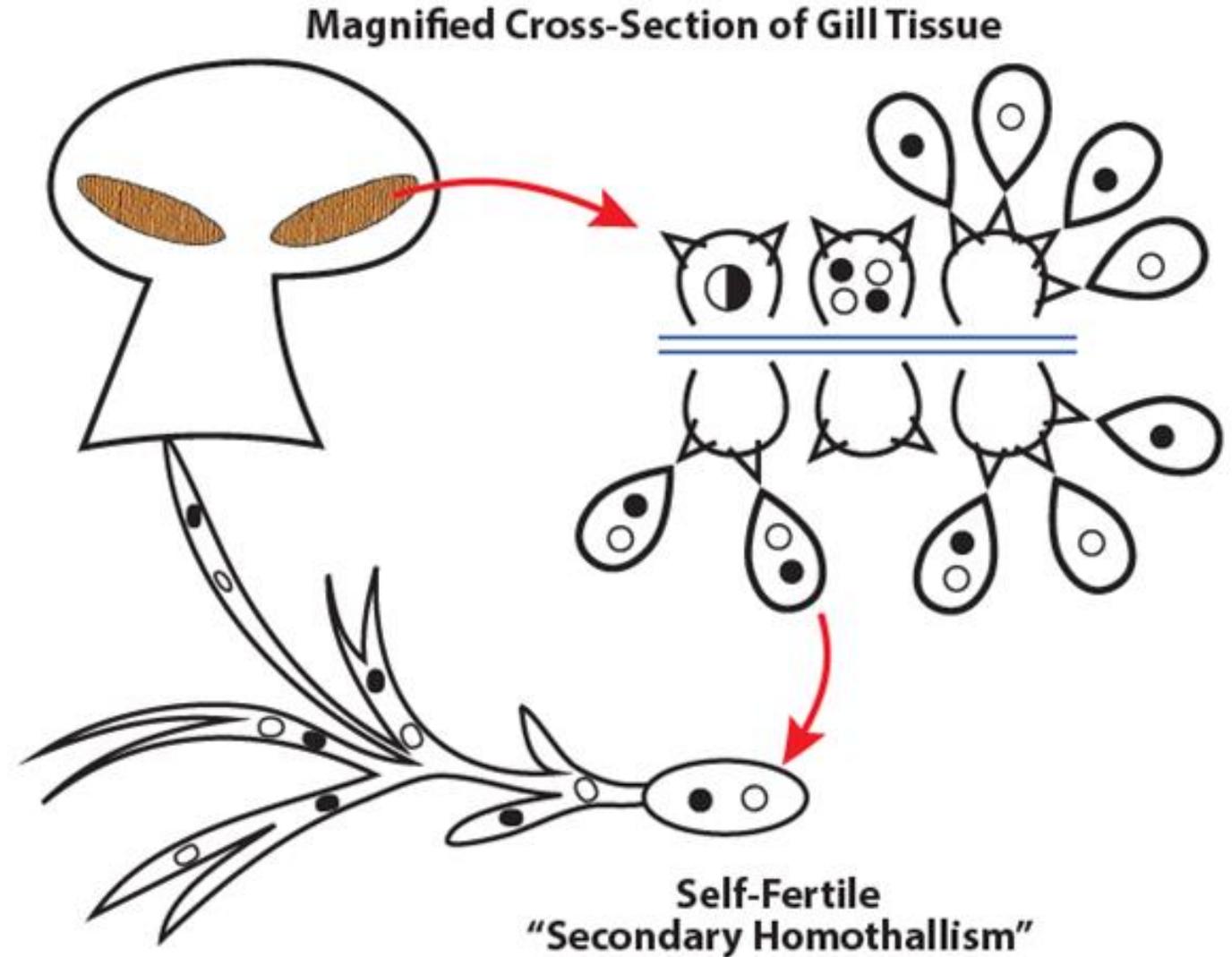
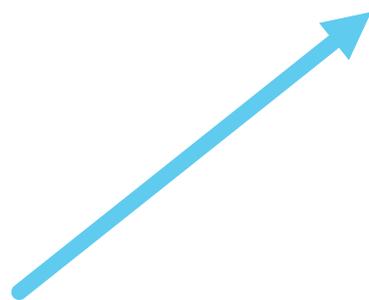
**Hybrid heterokaryon formed  
at interaction zone**



**Heterokaryon culture ready for testing**

# Strain Development Selecting Spores

Selection of  
thousands of  
fertile spores to  
develop new  
lines “**Excalibur**”





BLW2  
██████████

6



BL2



Excalibur



# Excalibur

**Individual pinning style**  
**Thicker stems**  
**Denser caps**  
**Higher picking rate**  
**White hybrid**  
**Increased quality**





**Fast growth on all compost  
types  
Reduced pin density soft  
flush**

**Excalibur**



OF NORTH AMERICAN  
**GROWERS**  
GROW OUR TOP

**2** PROPRIETARY  
VARIETIES:  
HEIRLOOM & BROWN



**9**

MONTEREY MUSHROOMS  
FARMS TESTING ALL  
AMYCEL PRODUCTS



**#1**  
**LEADER**



IN  
**STRAIN**  
DEVELOPMENT

**50%**  
**LARGER**

NEW EXPANDED TEST FACILITY



**FULL RANGE**  
OF SUPPLEMENT PRODUCTS

**10**

FULL-TIME  
RESEARCHERS  
DEDICATED TO  
DEVELOPING  
A NEW HYBRID  
WHITE STRAIN



DEDICATED TO OUR NEW  
**PROPRIETARY**  
HYBRID WHITE STRAIN

**32**

STATE-OF-THE-ART  
EXPERIMENTAL  
GROWING ROOMS



**THOUSANDS**  
OF NEW HYBRID STRAINS  
SCREENED EACH YEAR

People, Products & Performance  
**You Can Trust**

