



# Preservation and fermentation: under the glass

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# ACKNOWLEDGEMENT OF COUNTRY

I would like to acknowledge the traditional Aboriginal owners of the land we are presenting from, and the lands where you are all joining us from today. I would like to pay my respects to Elders, past, present and emerging and I extend that to any Aboriginal or Torres Strait Islanders joining us today.

This is your land, always has been, always will be.




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**food science & technology**

**Dr Julian Cox, UNSW Sydney**

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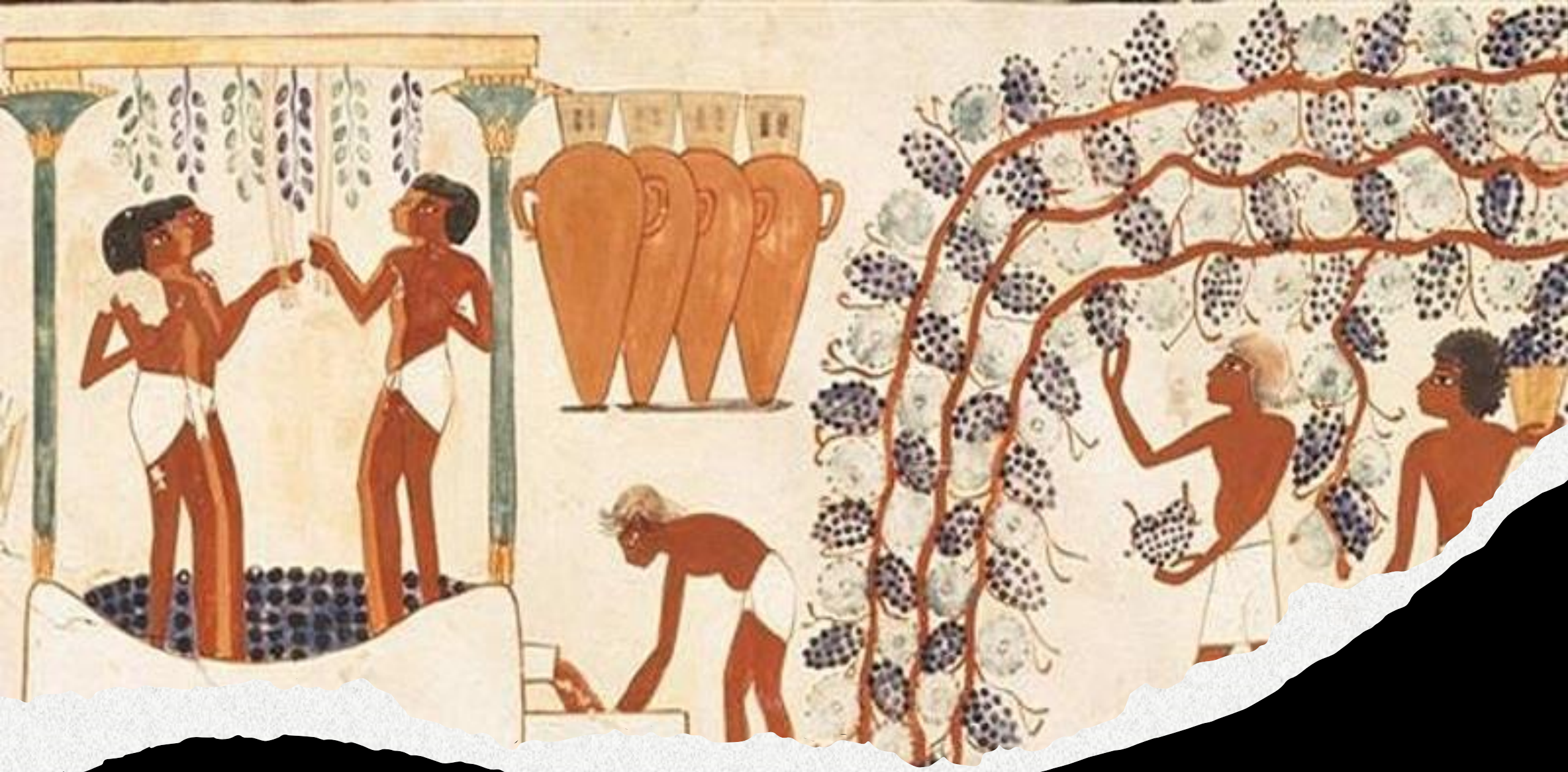
Food safety at your fingertips



# **Food preservation: under the glass**

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# Preservation

- Cooking (heating)
- Drying
- Salting
- Pickling
- Fermentation











# Glass

- History – 5000 years
- Inert
- Impermeable
- Transparent
- 'Flexible' – design
  - Shape
  - Colour - plain or coloured – look, function
- A sensory experience
  - premiumisation, marketing
- Recyclable

# Putting preservation into the glass

# Putting preservation under the glass

A collection of jars containing various preserves, including jam and honey, alongside fresh apples and a wooden cutting board with bread and jam. The jars are arranged in a cluster, with one in the foreground and others behind it. The apples are vibrant red, and the bread is golden brown with a spread of jam. The background is dark, making the items stand out.

# Extending shelf-life



<https://similarpng.com/strawberries-on-transparent-background-png/#getdownload>

[https://pngimg.com/uploads/jam/jam\\_PNG131.png](https://pngimg.com/uploads/jam/jam_PNG131.png)

# Preservation



# Preservation

- Temperature (high/low)
- Salt
- pH (acid)
- Water activity (moisture)
  - Drying
  - Evaporation
  - 'Binding' (solutes – sugar)
- Atmosphere



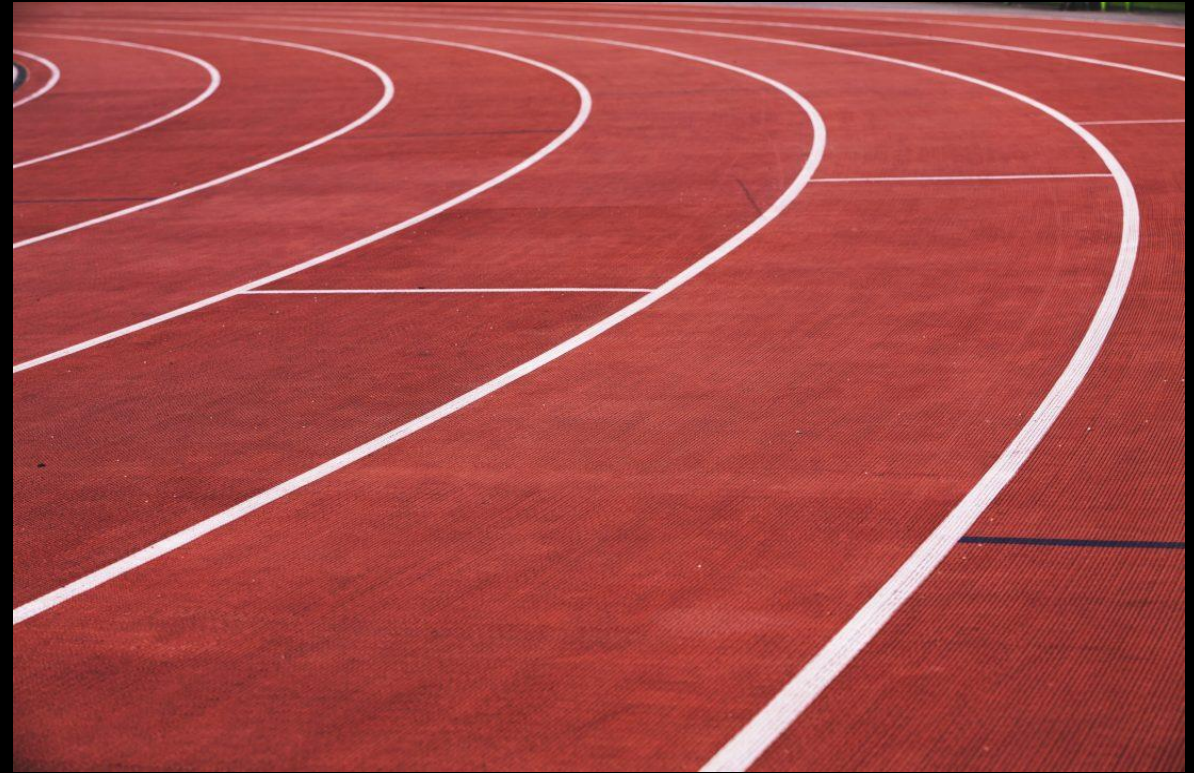


# Fermentation

# Preservation and fermentation

- Preservation – extension of shelf-life
- Sensory enhancement, DIVERSITY
  - Tastes, flavour, aroma, texture, appearance, aural
- Removal of undesirable components
- Increasing nutritive value

# Fermentation



<https://media.istockphoto.com/photos/hurdles-on-competition-background-picture-id1130509319?b=1&k=20&m=1130509319&s=612x612&w=0&h=hAPOgHYVOxV3FCVIHk9iEPGx7nMF2LsFOwLANxxeIE4=>

<https://isorepublic.com/wp-content/uploads/2018/11/athletics-track-1100x733.jpg>

# Preservation and fermentation

- Temperature (removal and *growth*)
- Salt
- pH (acid)
- Water activity (moisture)
- Atmosphere
- Intrinsic or through fermentation

# Fermentation

- Vessel
- Substrate/matrix (food, for...)
- Additions (salt, *etc.*)
- Microorganisms
  - Natural
  - Added – starter culture
  - Single to diverse community

**Follow the recipe  
Follow the rules**

**KIMCHI**

EASY & HEALTHY





Napa cabbage



Apple



Garlic



Ginger



Asian pear



Brown sugar



Salt



Salty shrimp



Green onion





**When things  
go wrong...**



# Summary

- Preservation – long history
  - Extension of shelf life, diversity of products
- Fermentation
  - Extension and DIVERSITY
- Glass
  - Material and vessel to match process and (premium) products
- Doing preservation right
  - Follow the rules/recipes
  - Missteps could be very costly



# THANK YOU



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