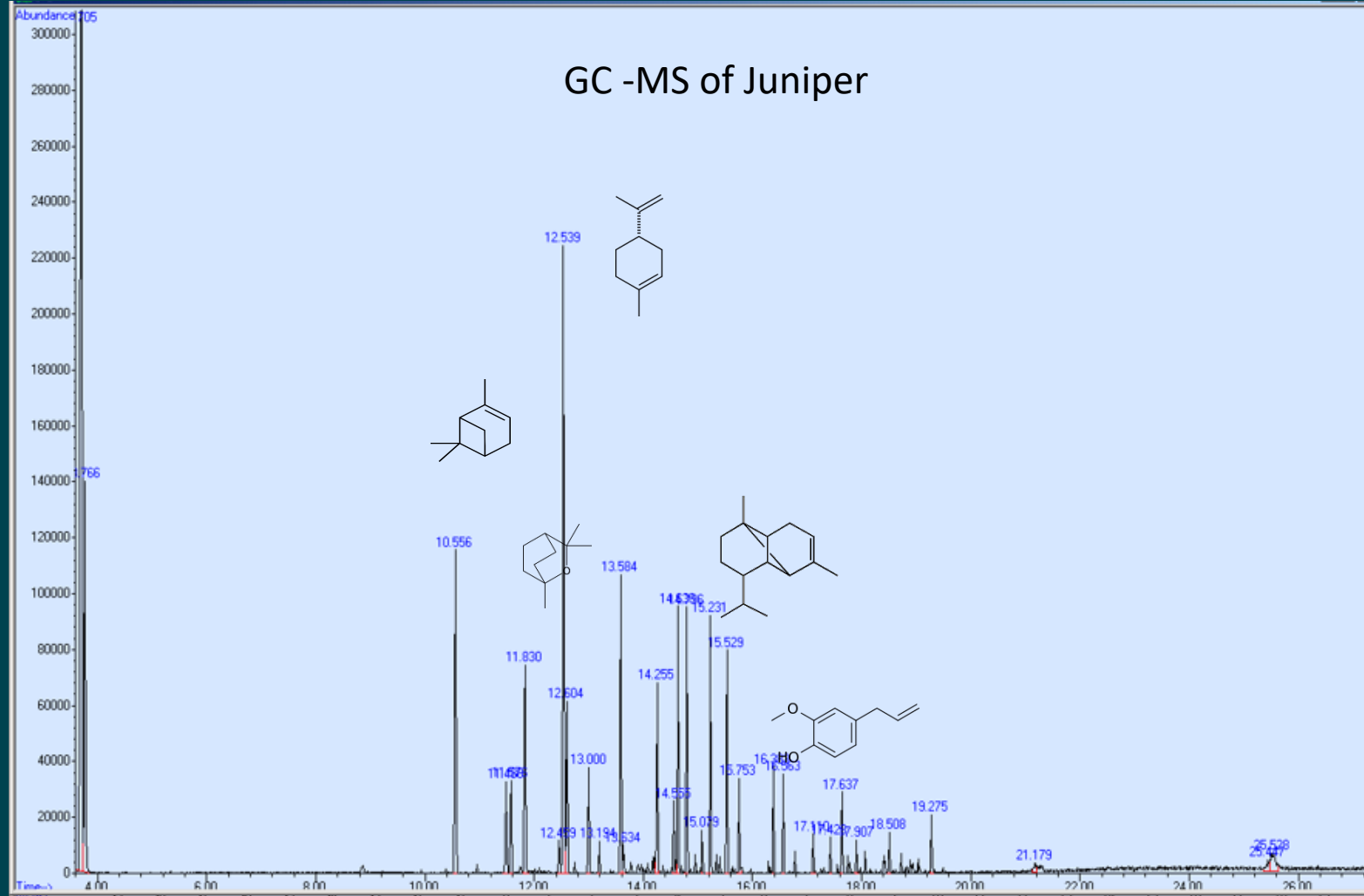


SYMPHONIA

HANDCRAFTED IRISH SPIRITS



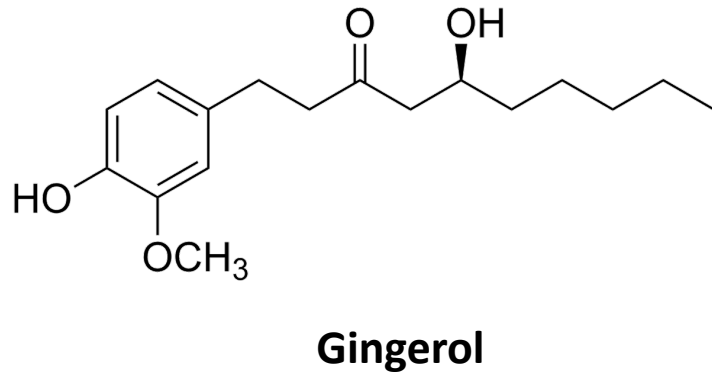
Physico-Chemical Parameters

Once know chemical identity you can look up or make an educated guess about:-

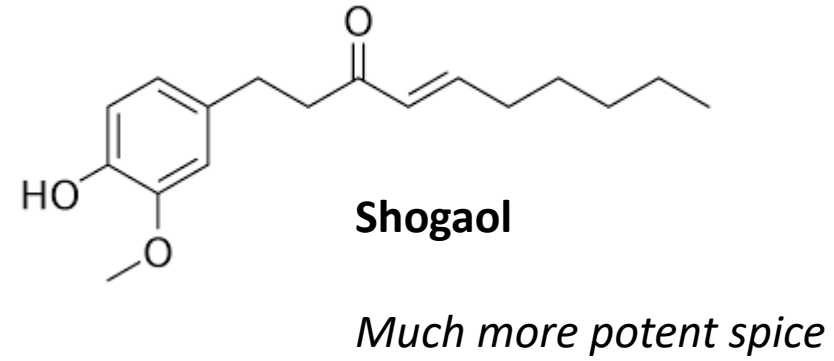
- Volatility – where is it likely to be most prominent in the distillation beginning middle or end?
- Solubility – is it going to be more soluble at high or low abv
- Stability – will it fall apart or transform on heating



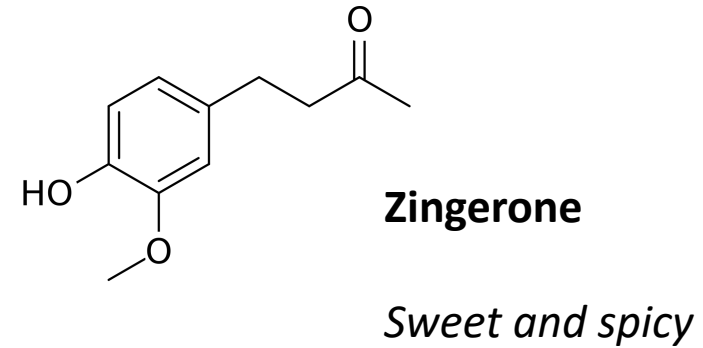
EFFECT OF HEAT ON GINGEROL



Dehydration



Retro-Aldol
Reaction



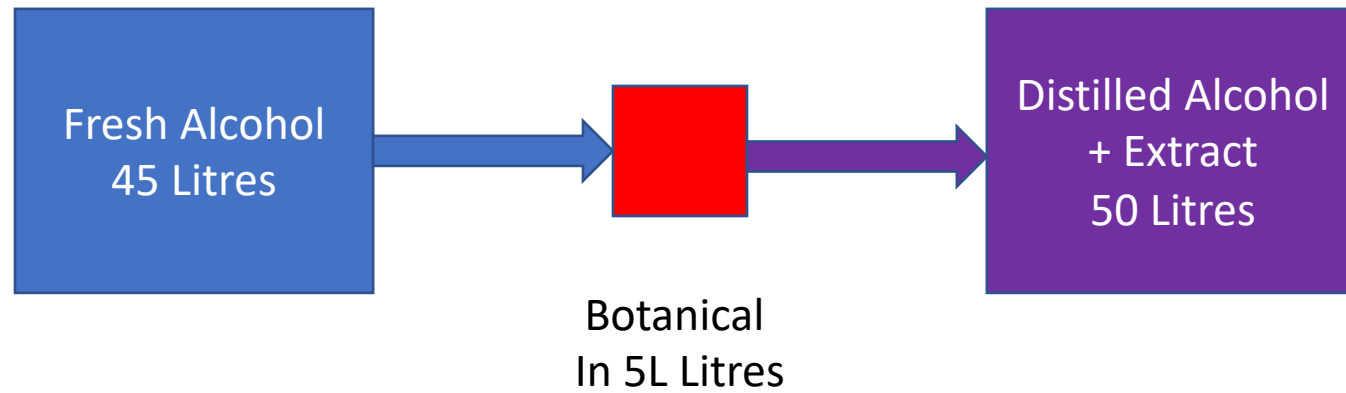
Distillation Parameters

Once you know chemical properties you can fine tune your extraction

- Temperature in the still – higher is good for solubility but not for stability and not for energy efficiency - it's a balance
- ABV in the still
- What fractions to collect



Semi-Continuous Extraction



Rotary Evaporator

- Can reflux
- Uses gravity to stir the flask so can distil slurrys
- You can fine tune the temperature of distillation
- Can use it in semi-continuous mode
- But eventually there is a limit to how much botanical you can fit in the flask



Microwave Still

- Used to extract essential oils from botanicals for perfumery aromatherapy etc etc.
- Uses the principle of hydro or steam distillation essentially water helps drive the oils out
- Here I have shown the set up outside the microwave
- Microwaves heat water inside the plant cells breaking them open
- Here you can see the result of distilling 1kg of juniper this tiny amount of oil is enough for 500L of gin.
- You still need to fractionally distil because this contains all the flavours even the bad ones!
- You can modify this to work under vacuum for more delicate botanicals



Microwave Still

<http://www.milestonesrl.com/lp/mac-75.html>

- Here you can see a much larger 75 litre capacity still in action extracting rosemary
- It looks very simple in theory - in practise it takes a lot of practice!
- It does take time to identify the best conditions for each botanical
- For me it is a mega efficient debulking machine that works brilliantly together with the rotorvap



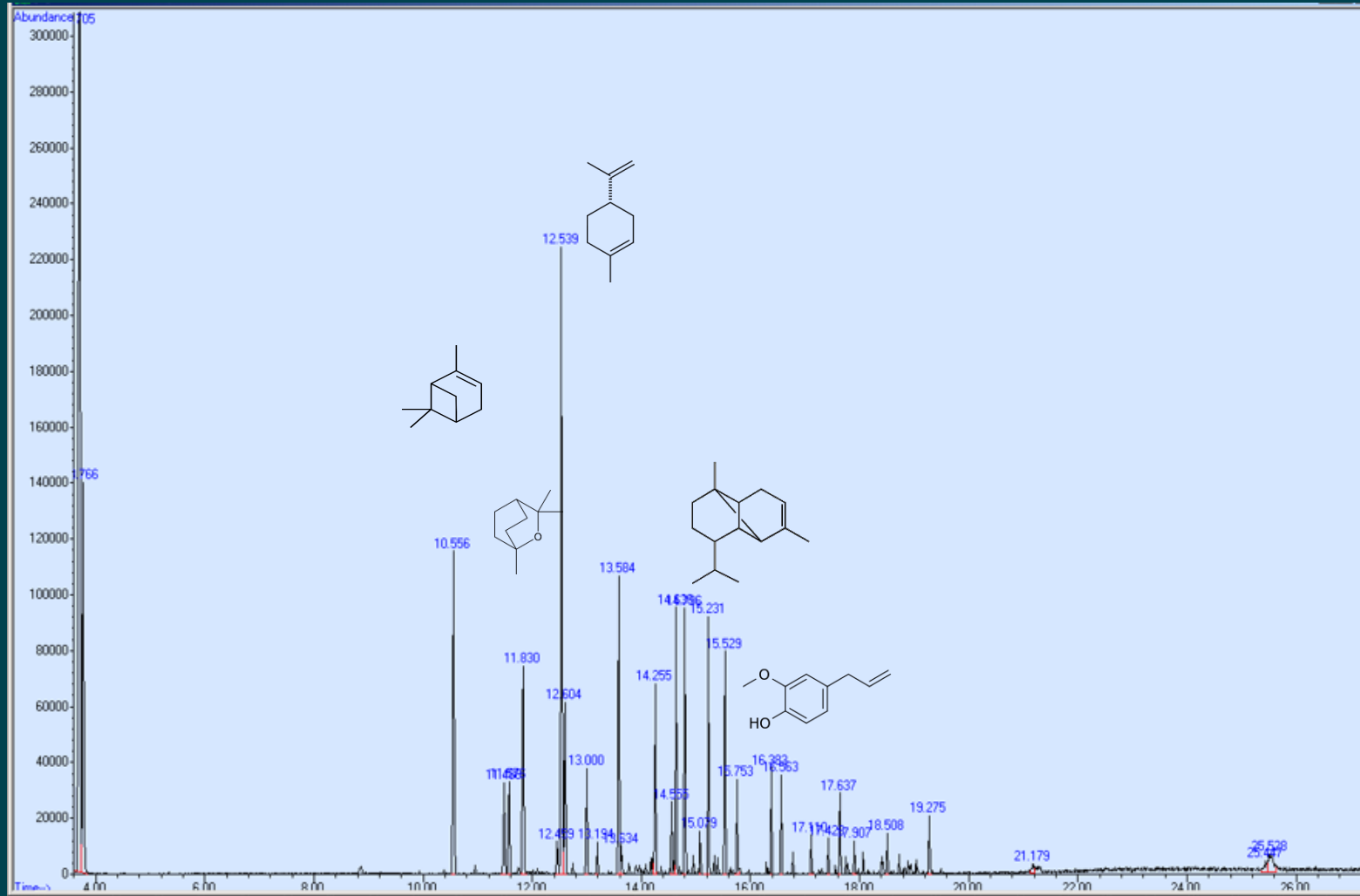
In conclusion

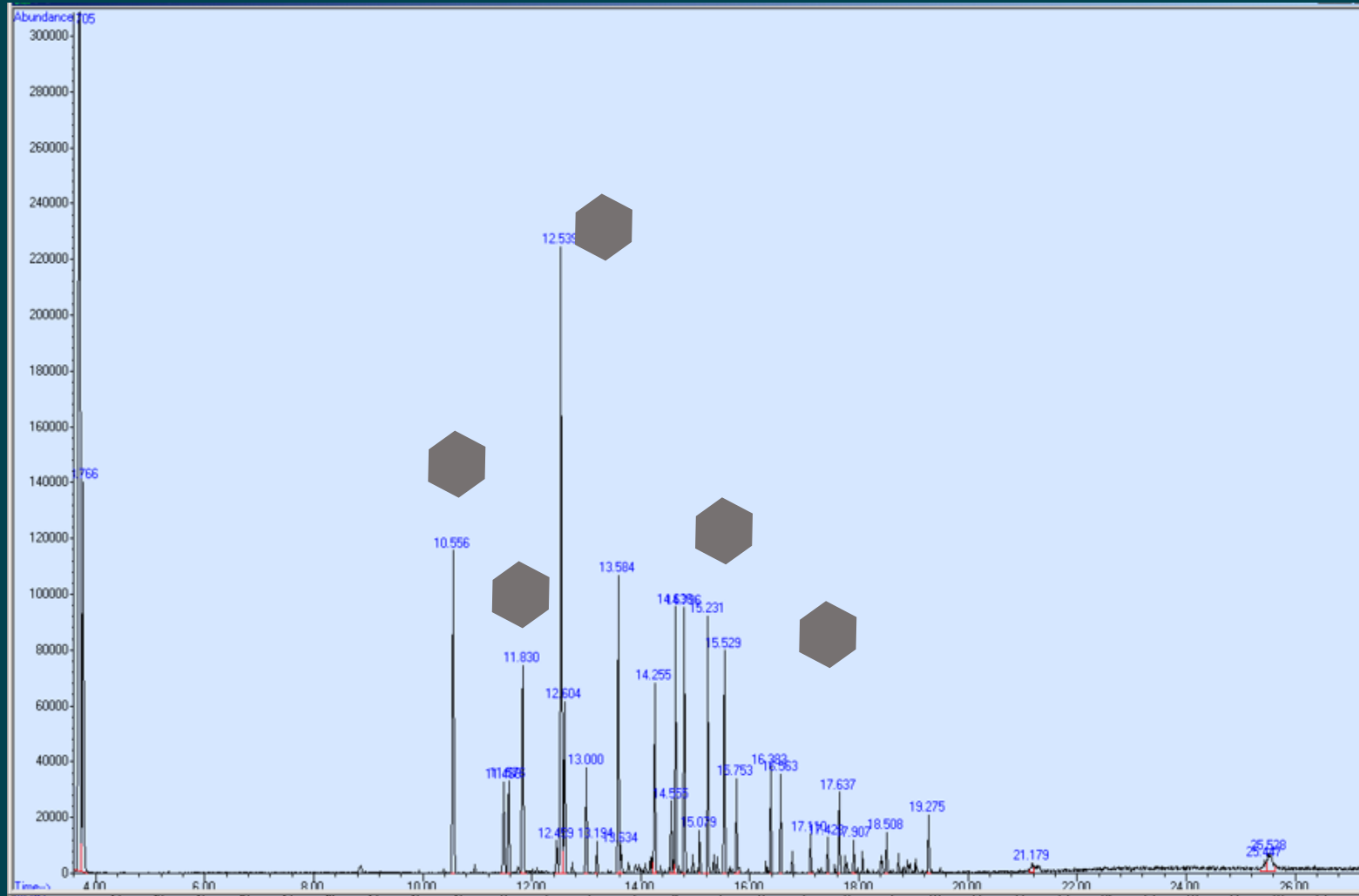
- I have shown you just how useful a rotary evaporator can be
- I have shown you how a microwave still could play a role
- I have shown you just how energy efficient our processes are using only 2% of the energy of a traditional still
- In 2018 the gin industry emitted 77,000 tons CO2 that's over 1.1M trees per year
- I think it is time to use science to make that number reduce

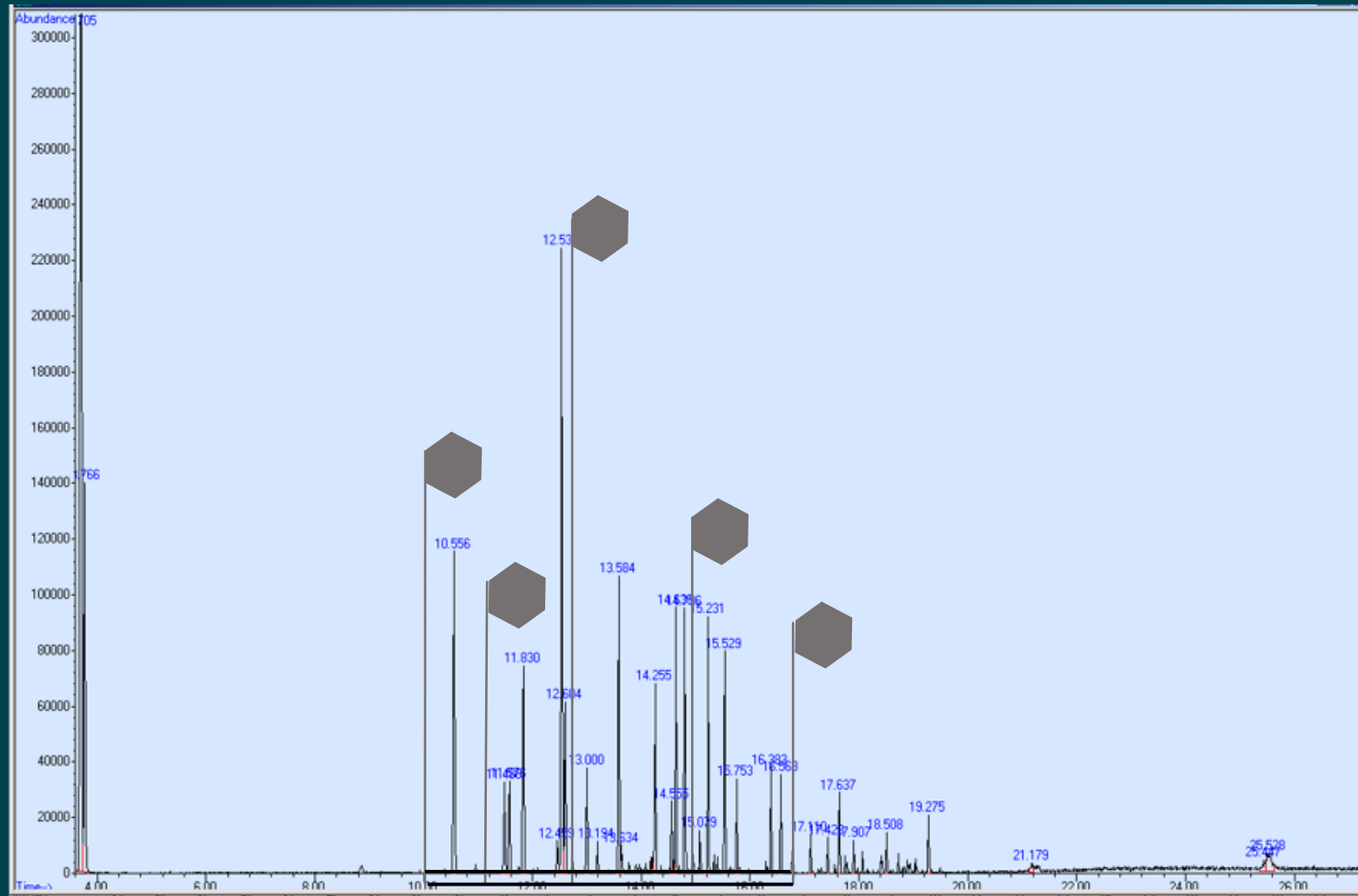
- Thanks to the Gin Guild for the opportunity

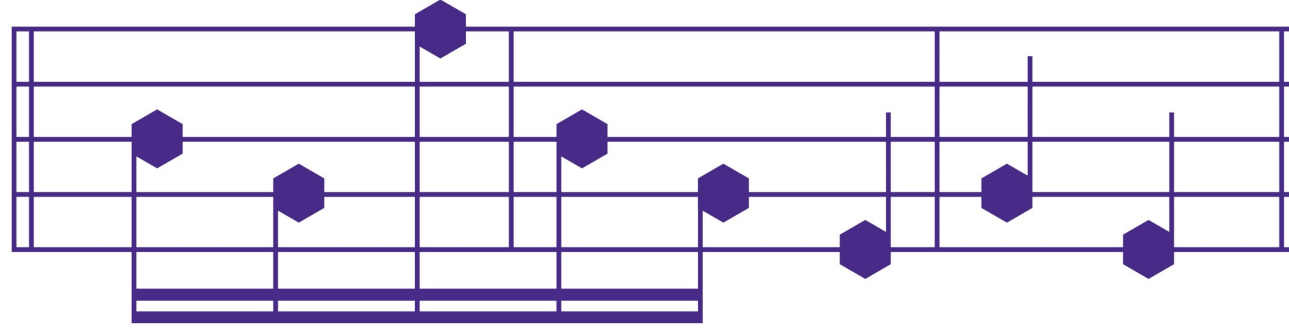
Gin making is not rocket science – it's far more complicated than that!











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