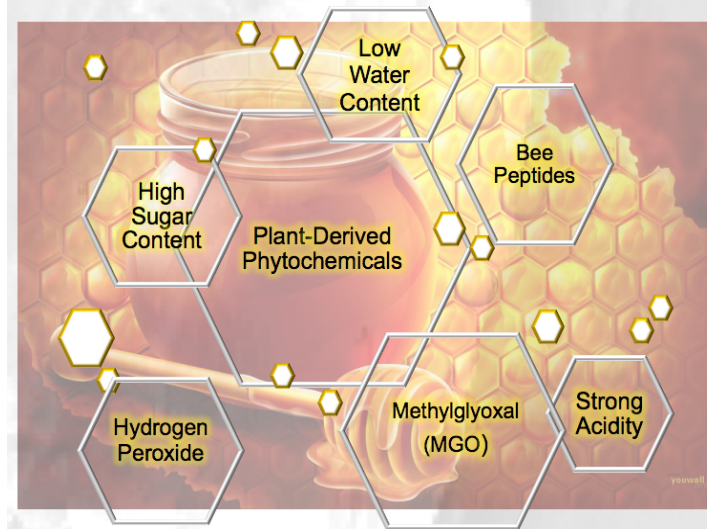




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Rapid methodology for drug discovery from nature



.....or How do you find the needle in the haystack?



❖ Molecules with high commercial value often found in nature

❖ Usually contained within complex and intractable mixtures

❖ Considerable effort bio-prospecting and collecting

❖ We have been exploring cost effective and efficient methods to rapidly identify molecules of interest

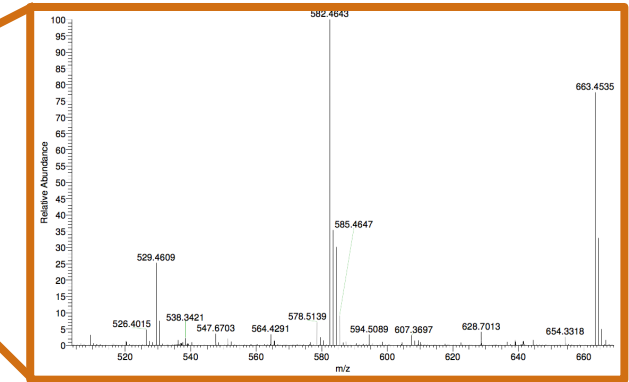
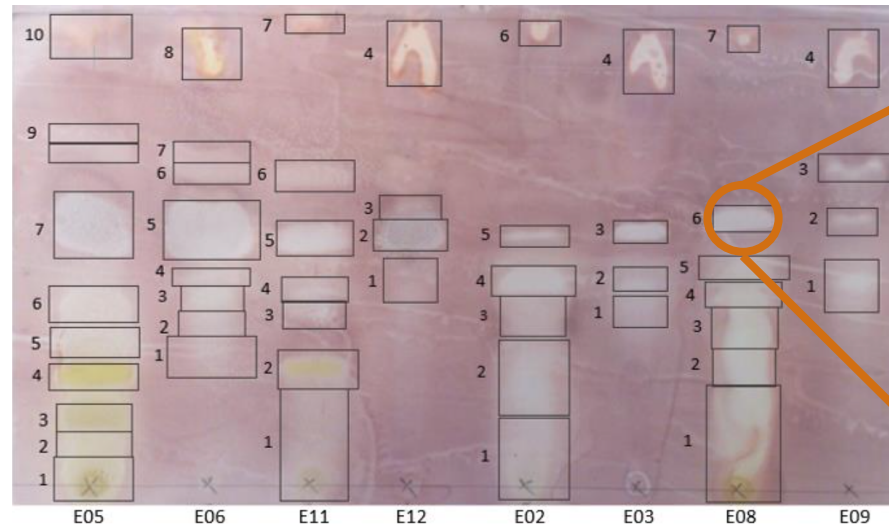
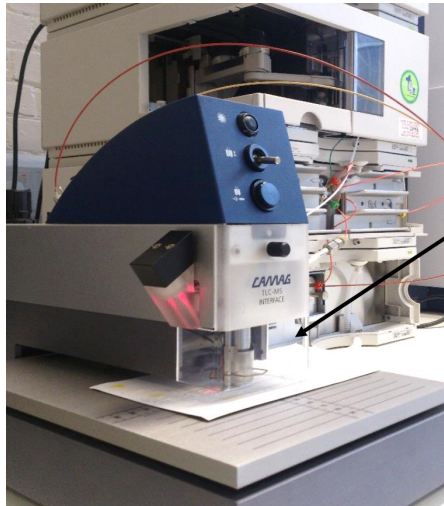


Collection Efforts



- ❖ Collected natural products from a variety of sources:
Tea, hops, honey, marine sponges, daffodils and more
- ❖ Mostly Welsh theme to collection
- ❖ Extract organic compounds using conventional solvent extraction = 'purer mixtures'

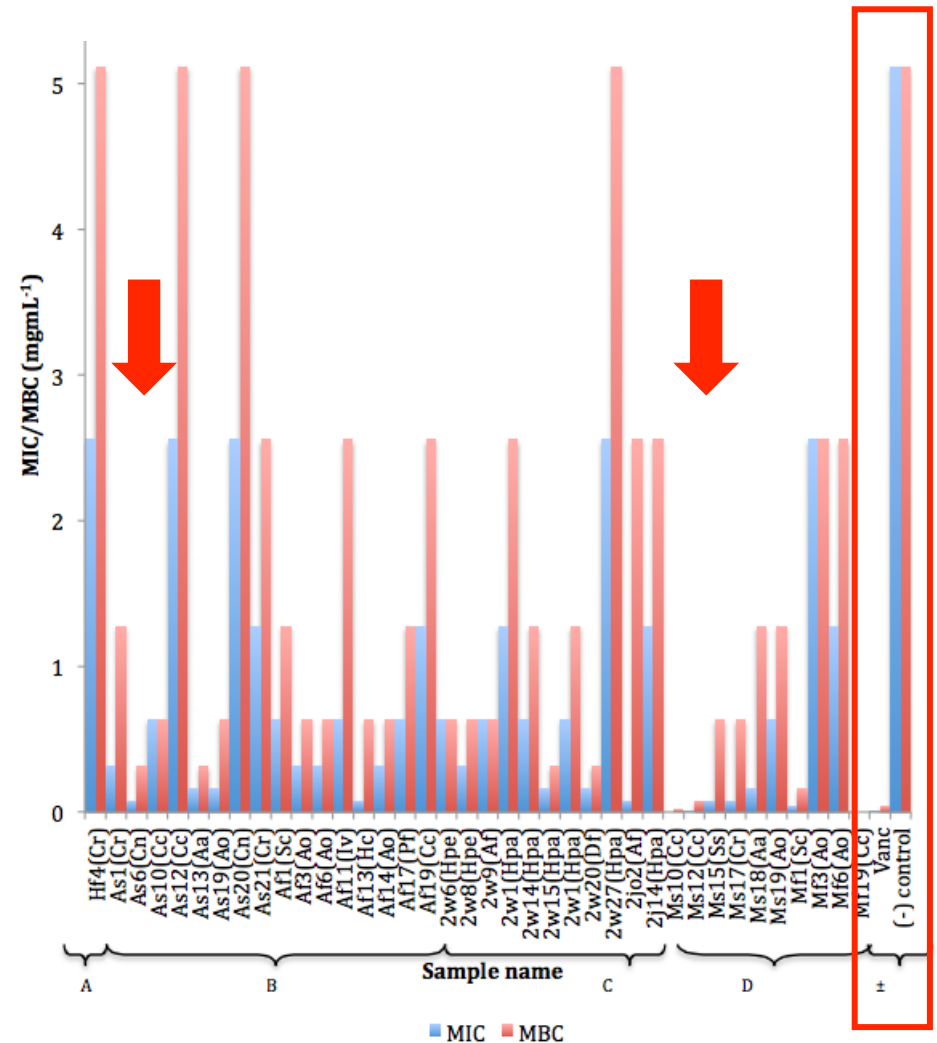
Bioautographic Chromatography



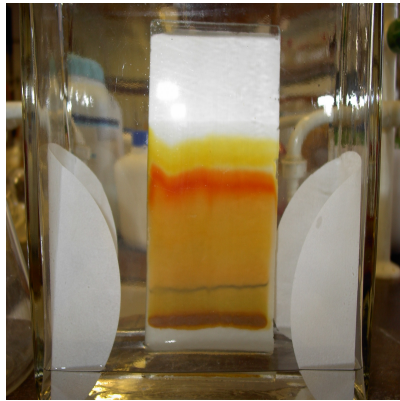
- ❖ Bioautographic thin layer chromatography can be used to simultaneously screen several mixtures
- ❖ *In situ* characterization of hits using mass spectrometry
- ❖ Avoids 're-discovery' - can filter for *unknowns*
- ❖ *and* an early assessment of drug-like properties (Lipinski's)

Biological Screening

- ❖ Screening against a variety of disease targets
- ❖ Focus on antibiotics and oncology
- ❖ Example: Welsh marine sponge extracts as effective as Vancomycin against MRSA, an important hospital 'superbug'



Summary



- ❖ We have developed methodology for rapid isolation of
 - ..novel..*
 - ..drug-like..*
 - ..bioactive..*
 -natural products
- ❖ Not an exhaustive study of a given organism, but quickly finds the *needle in the haystack*
- ❖ Spin-outs – we finance our beehives with sales of honey products.