

'A Career in Chemistry and Beyond'

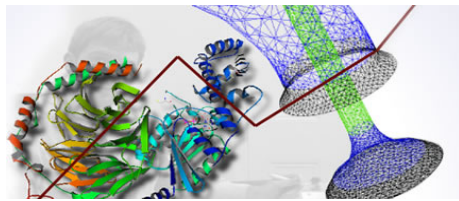


Orkney Science Festival, September 2023

Kevin Parker

KKI Associates Limited

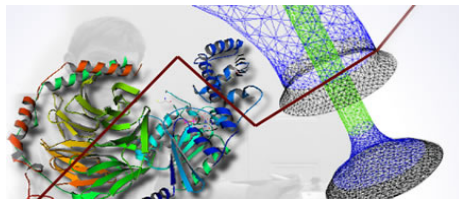
kevin@kkitech.com



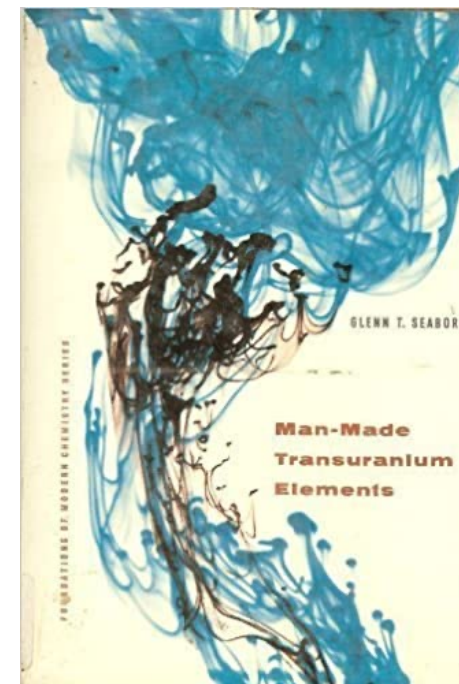
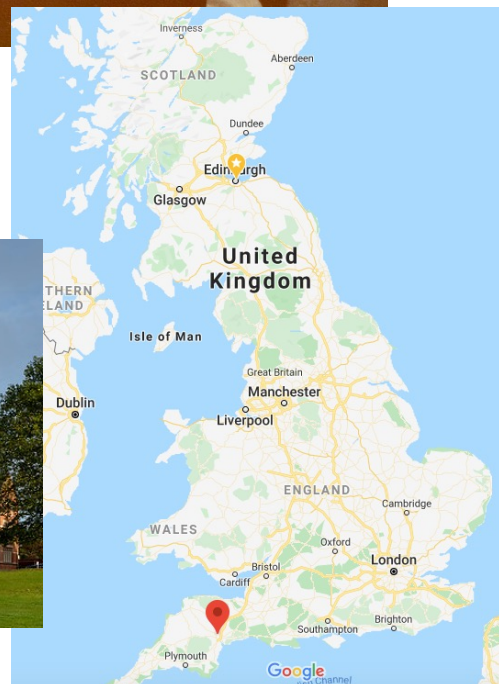
About me

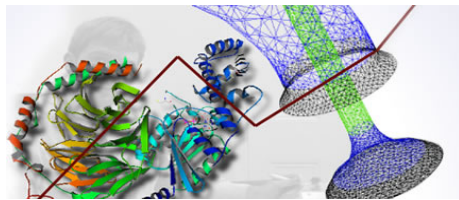


- My Career in Science from School to here!
- Education Edinburgh, Cambridge, LBS
- Work at a Big Company and by myself



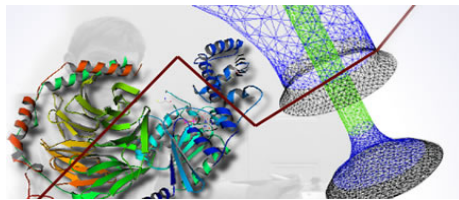
About Me



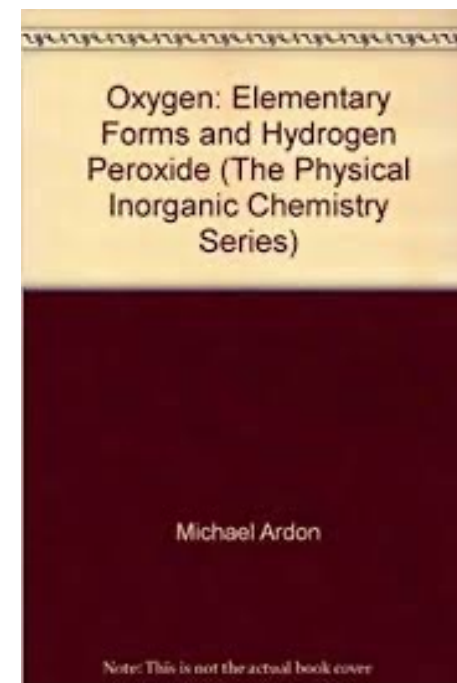
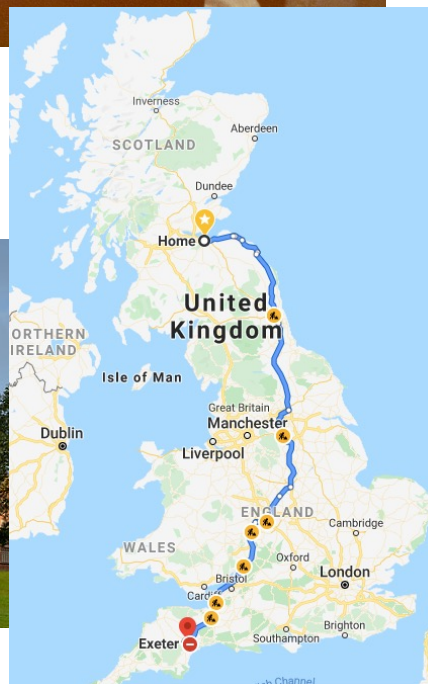


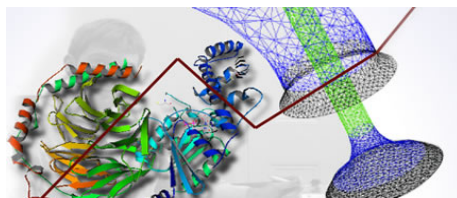
Can you see my chemistry teacher?



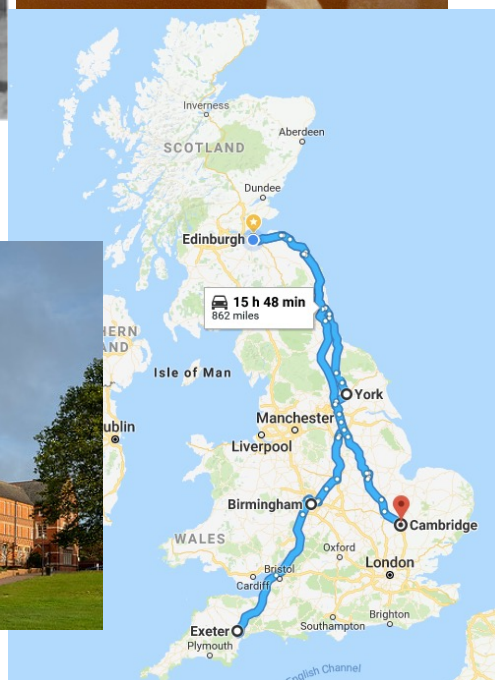


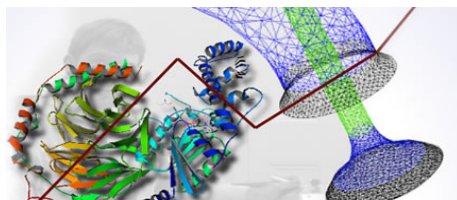
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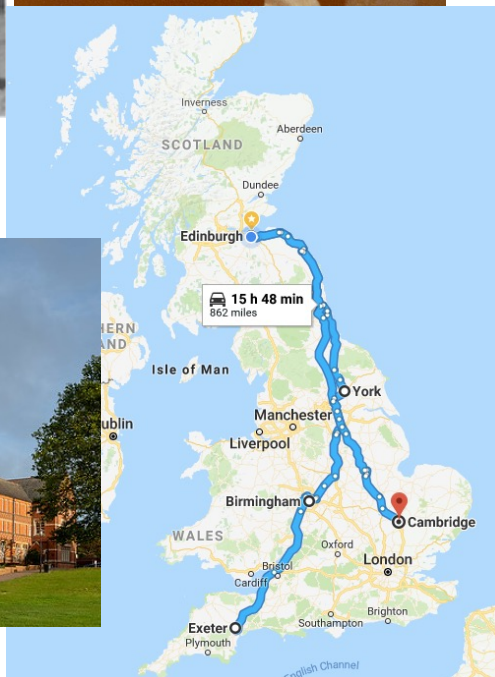


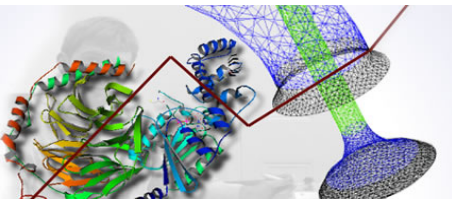
About Me





About Me



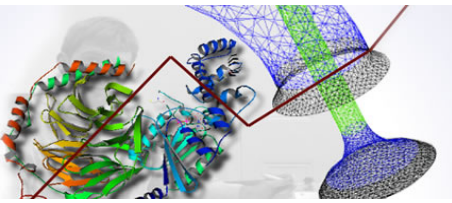


Getting a Job - R&D

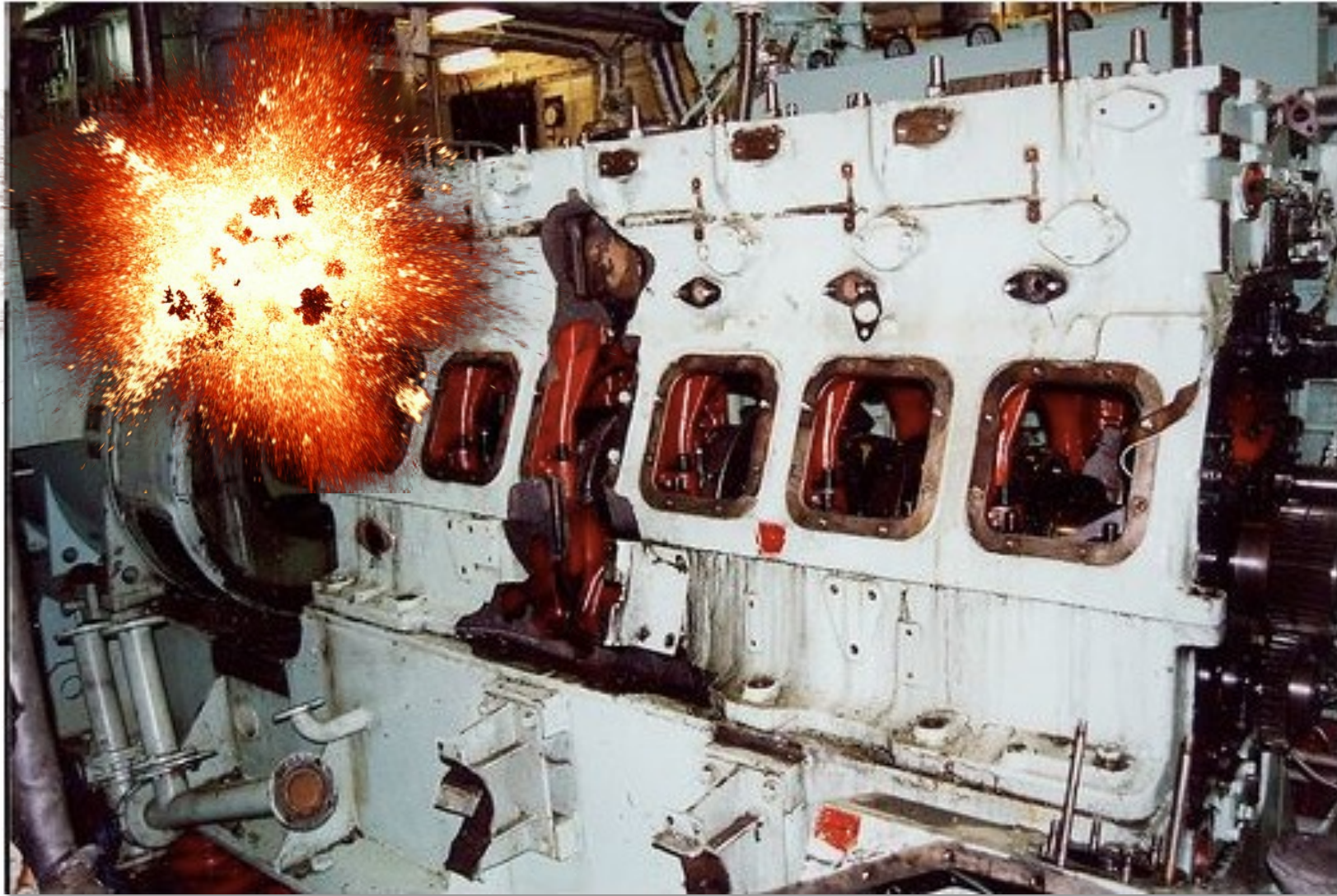


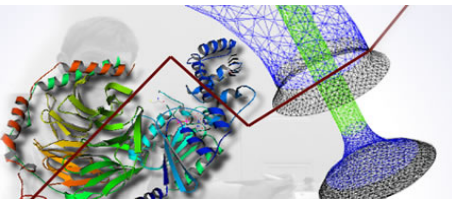
beyond petroleum

- Big Companies visit Universities to find new recruits
 - Interview: 'Oh you blew up a lab, no problem...'



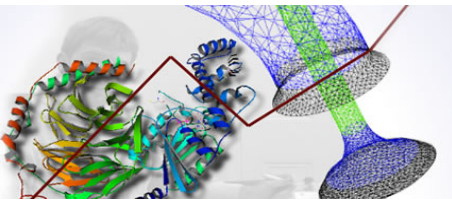
'We are blowing up engines'



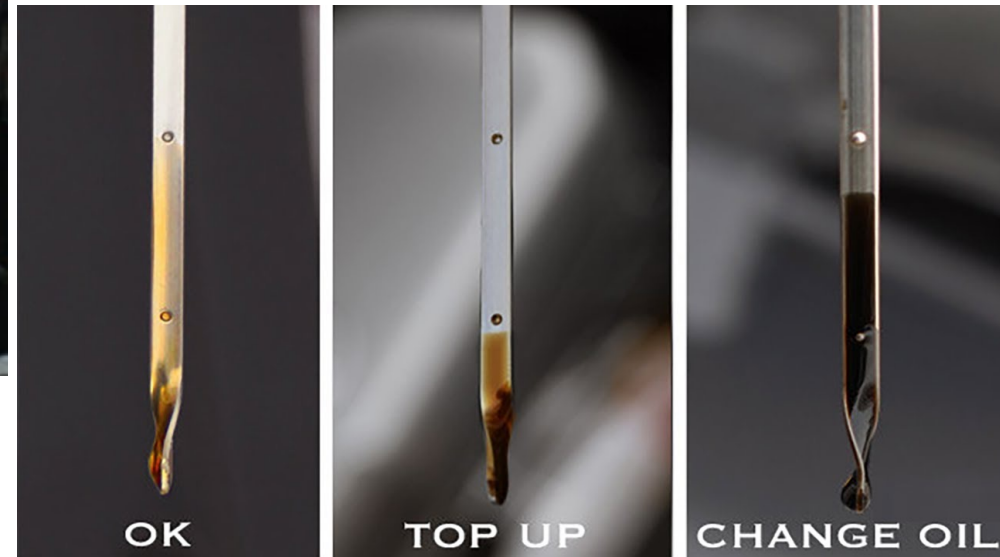


Some really big engines...

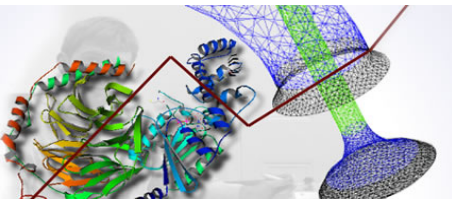




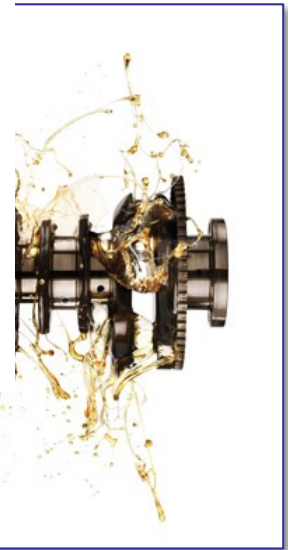
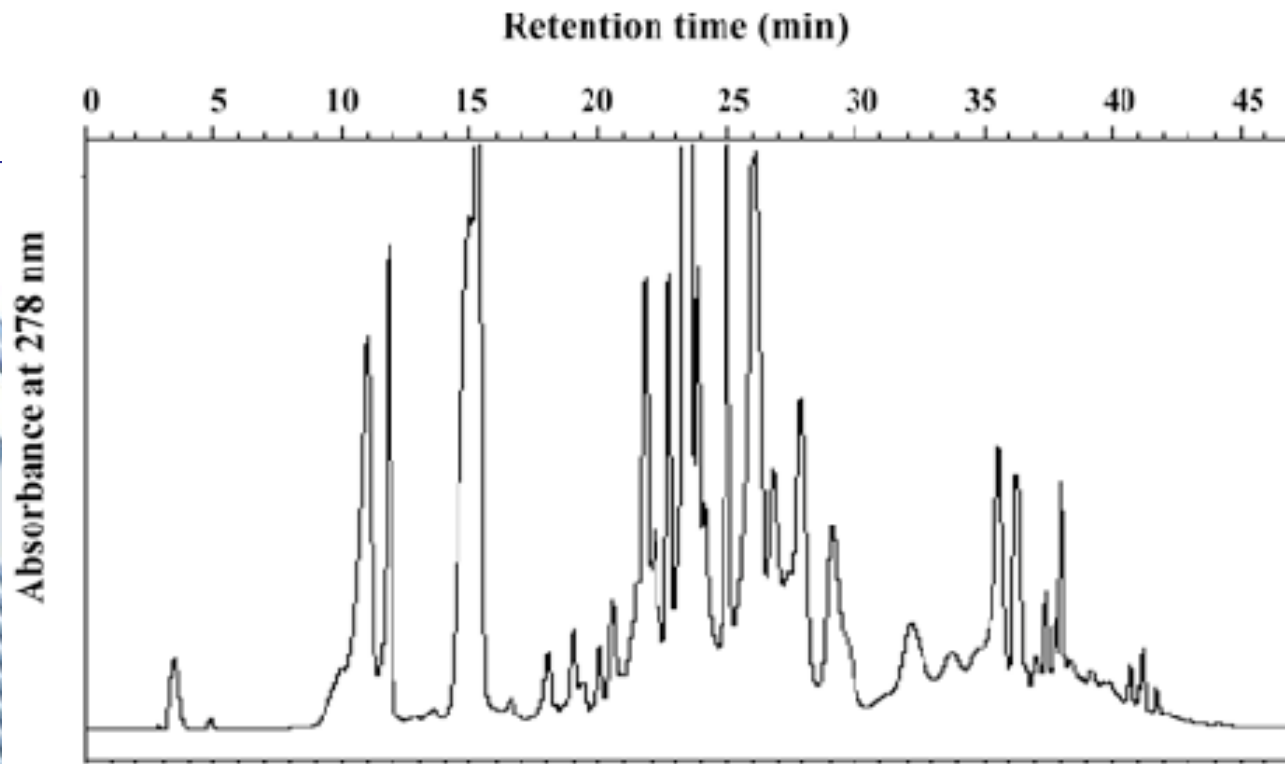
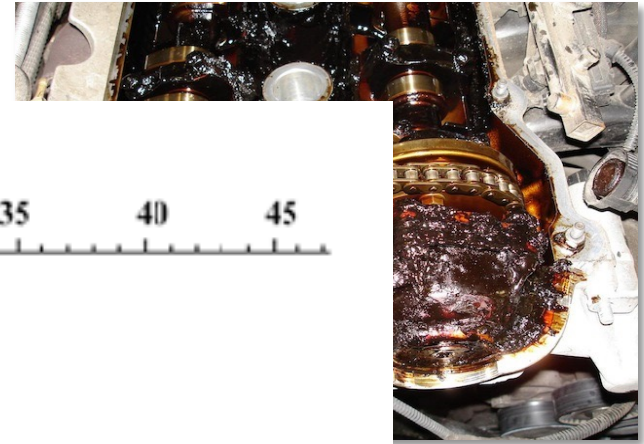
Something to Try

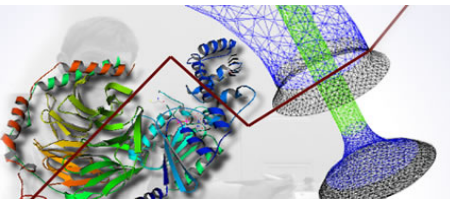


- Ask someone who has a car to show you how to check the oil in the engine – by finding the 'dipstick'



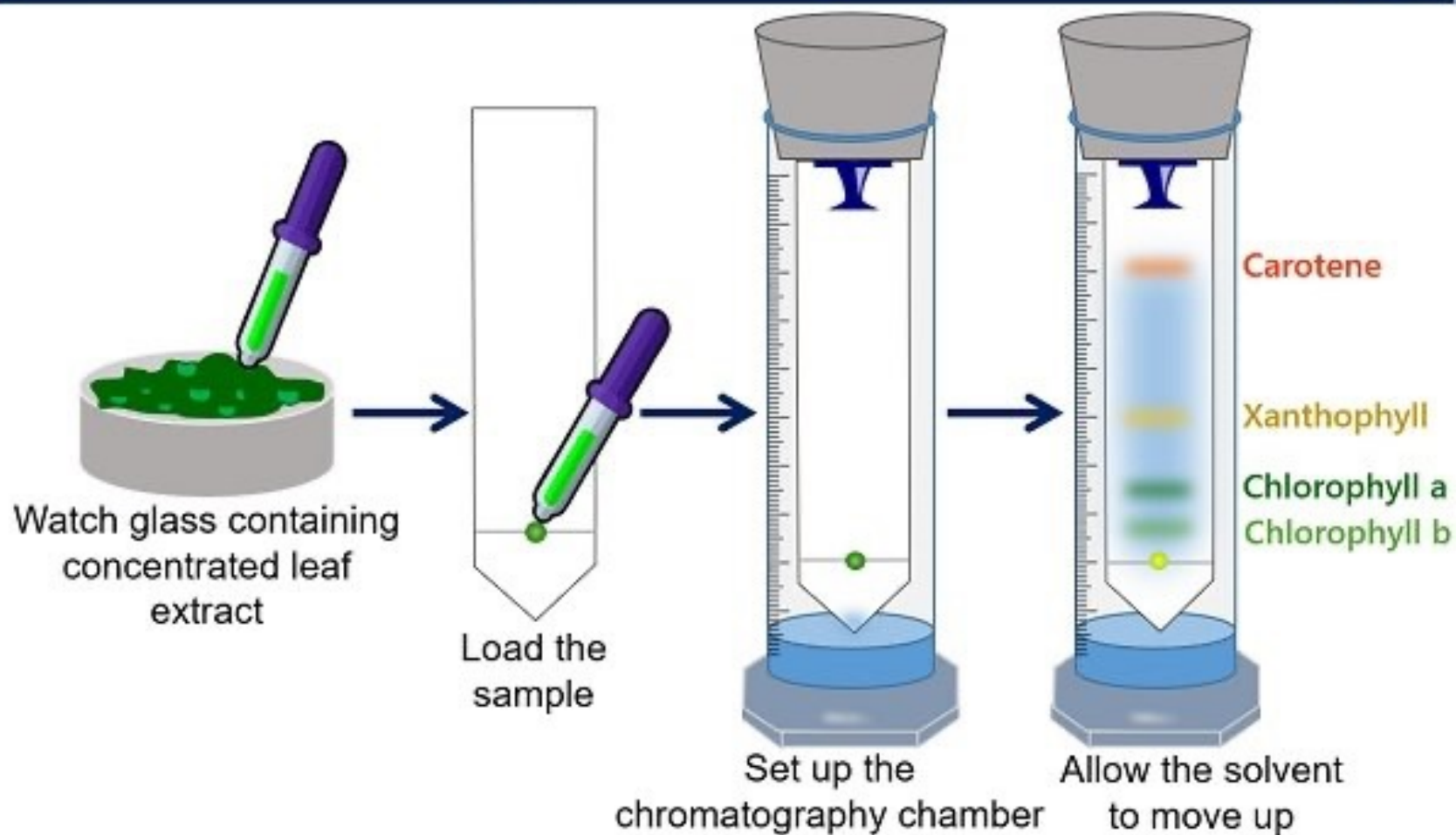
Solving the Problem





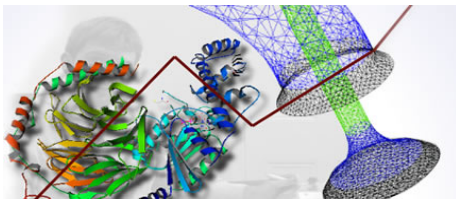
Something to Try

Separation of Plant Pigments through Paper Chromatography



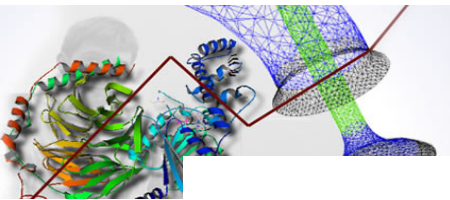
- You can separate grass into different coloured substances

See <https://edu.rsc.org/experiments/leaf-chromatography/389.article>



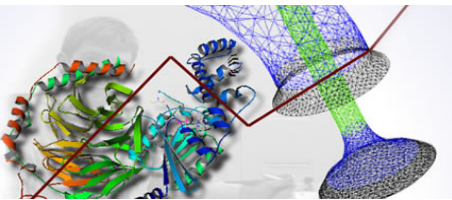
Why is This Picture here?





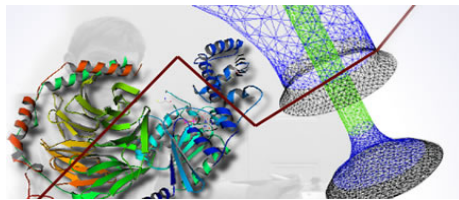
Selling Oil (to the Arabs!)



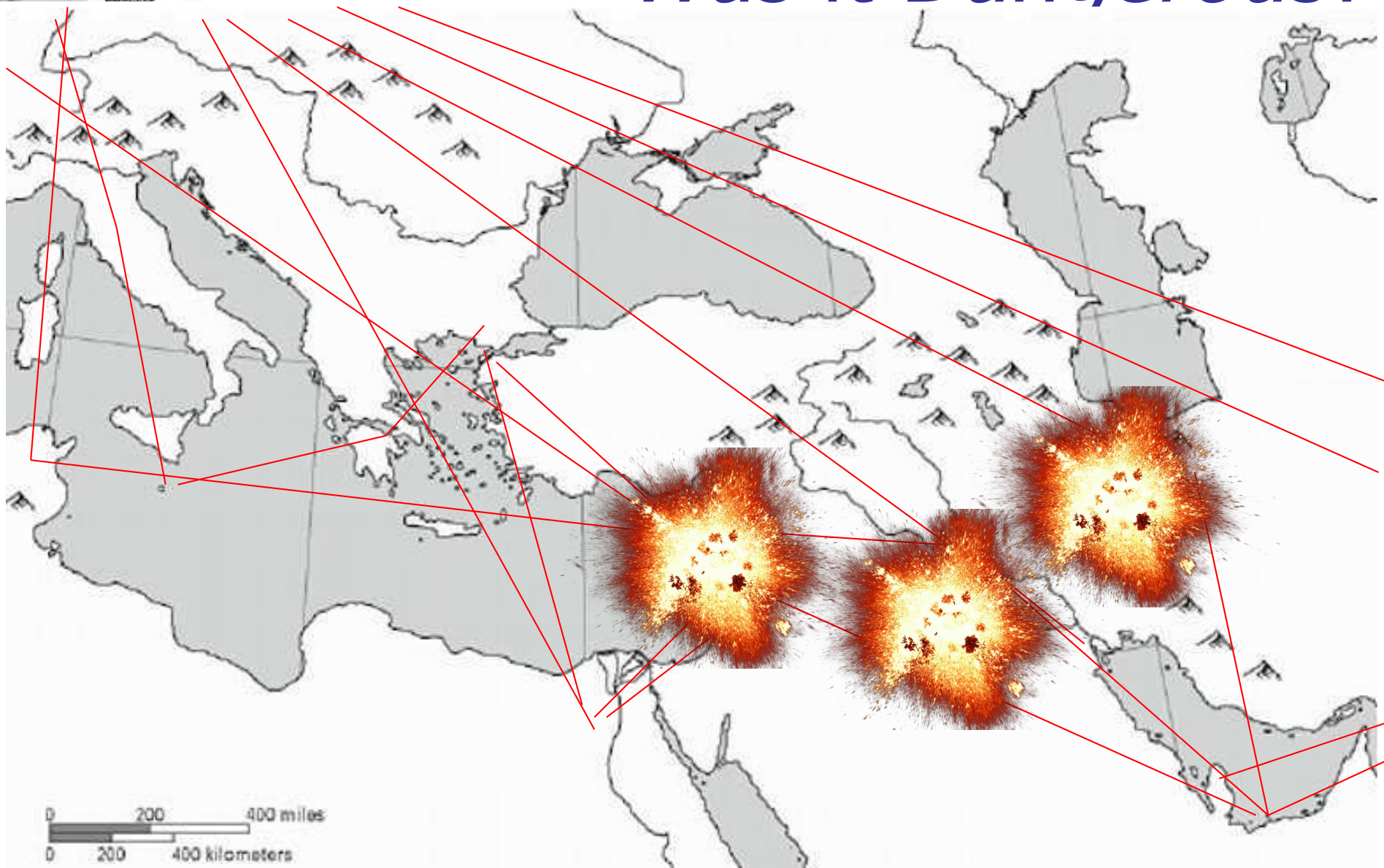


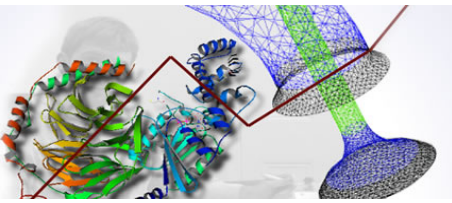
Where I went





Was it Dangerous?





Something to Try

■ Which country is which?:

- Syria
- Jordan
- Lebanon
- Egypt
- Iraq
- Iran
- Bangla Desh
- Malta



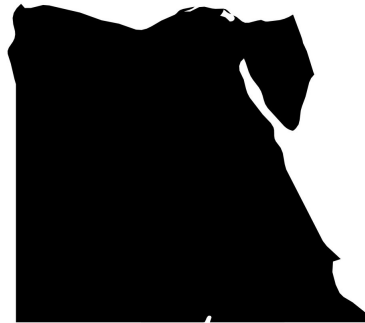
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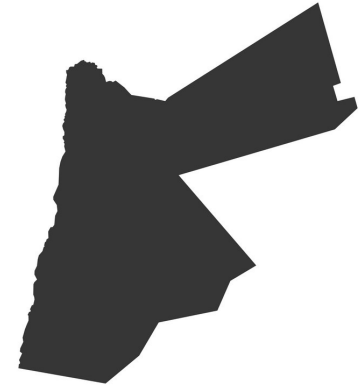
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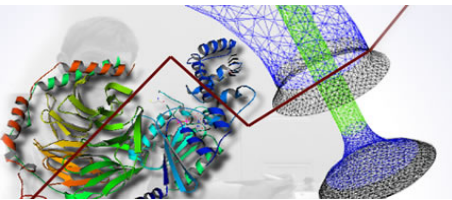


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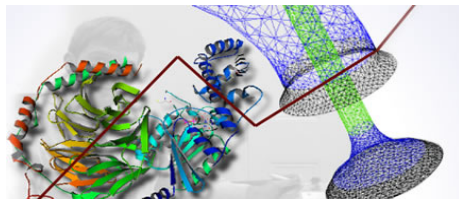
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Thinking about the Future



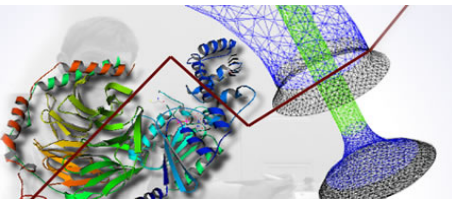


Changing Career – Leaving BP

- London Business School experience is good
 - Very Hard Work, great classmates



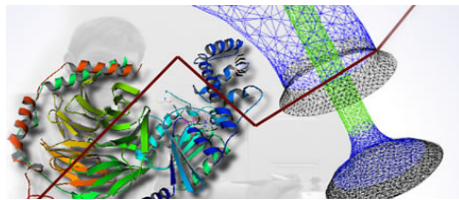
- Finish Masters and there is a recession ☹️
 - 250+ job applications in 2-3 years



Working on My Own

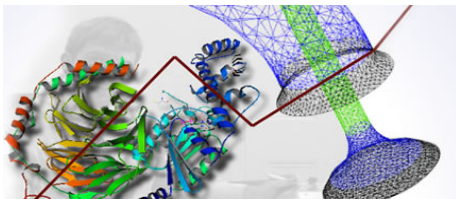


- 'What are these and where am I?'

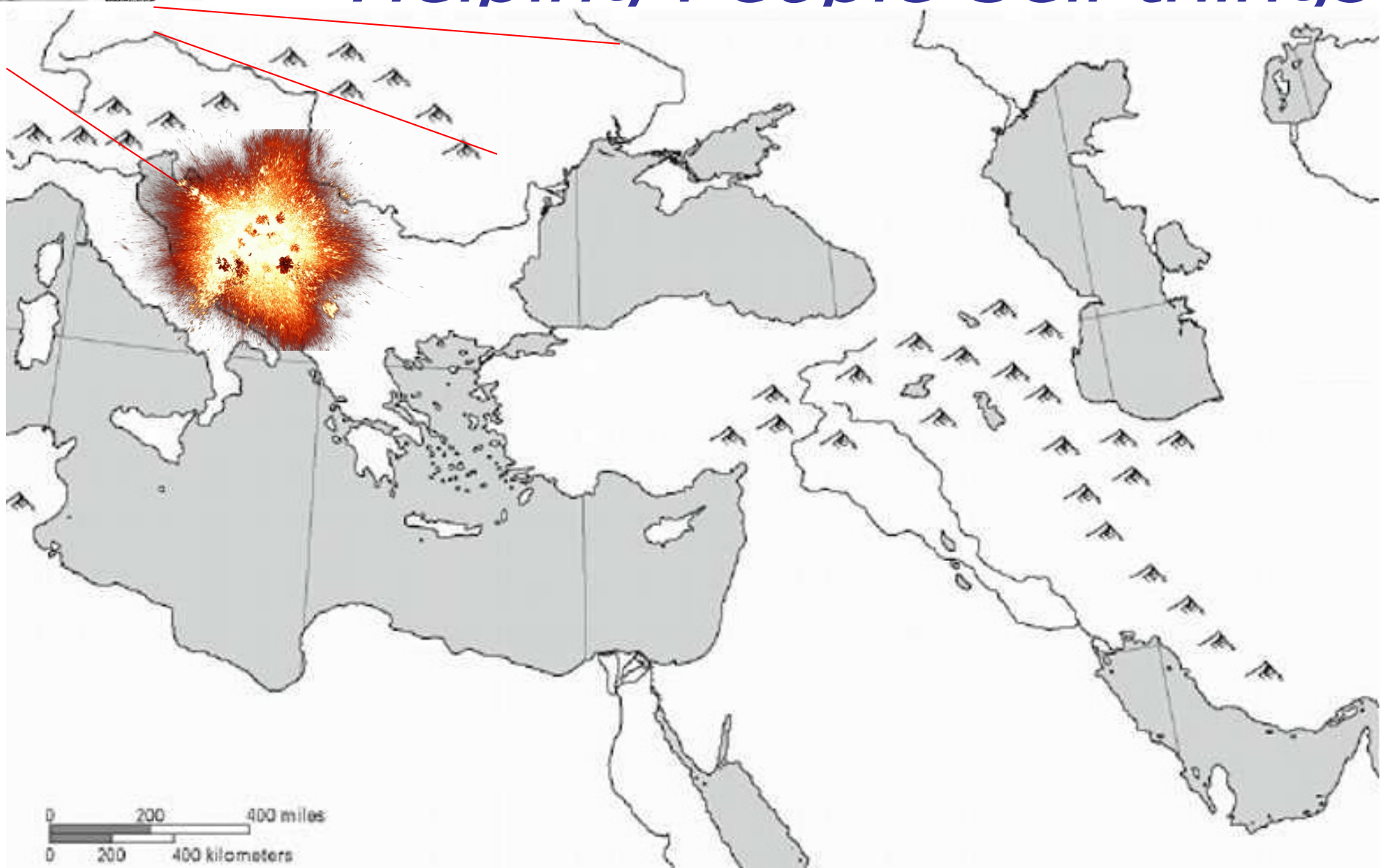


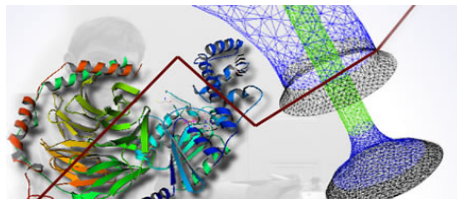
Helping People Sell things





Helping People Sell things

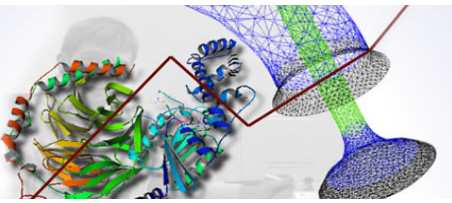




Was it dangerous?



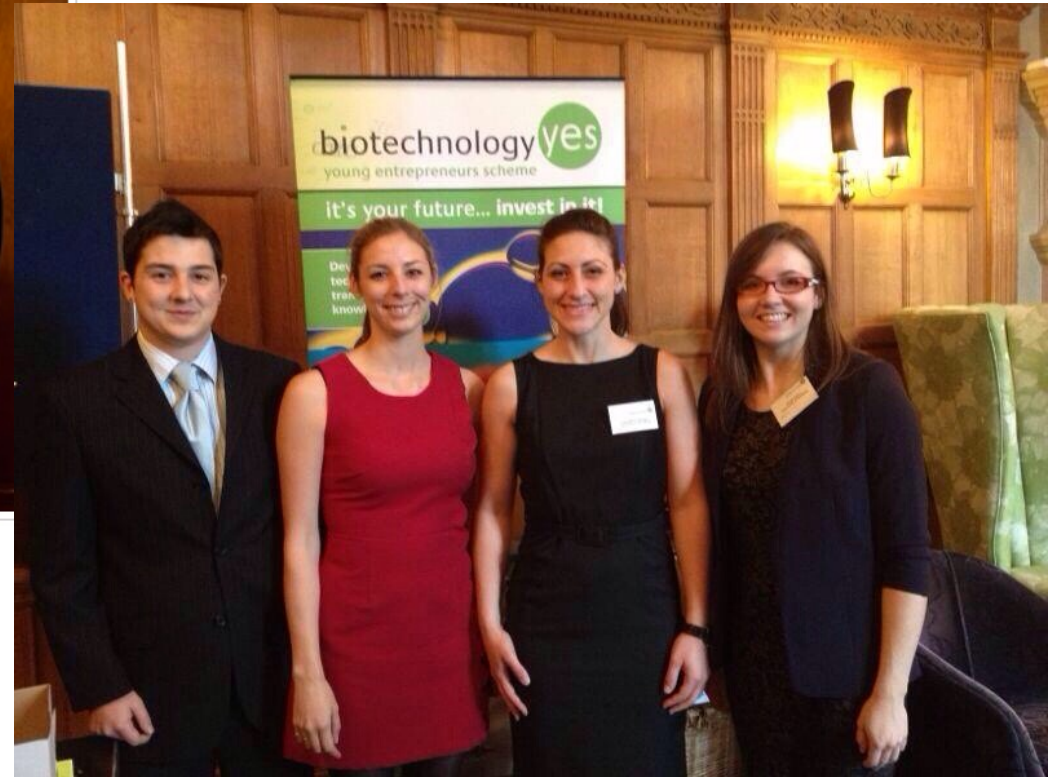
0 200
0 200 400 kilometers

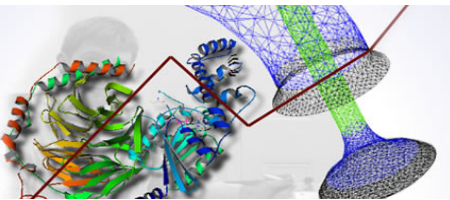


Teaching People about things

Researchers reach final of business plan competition

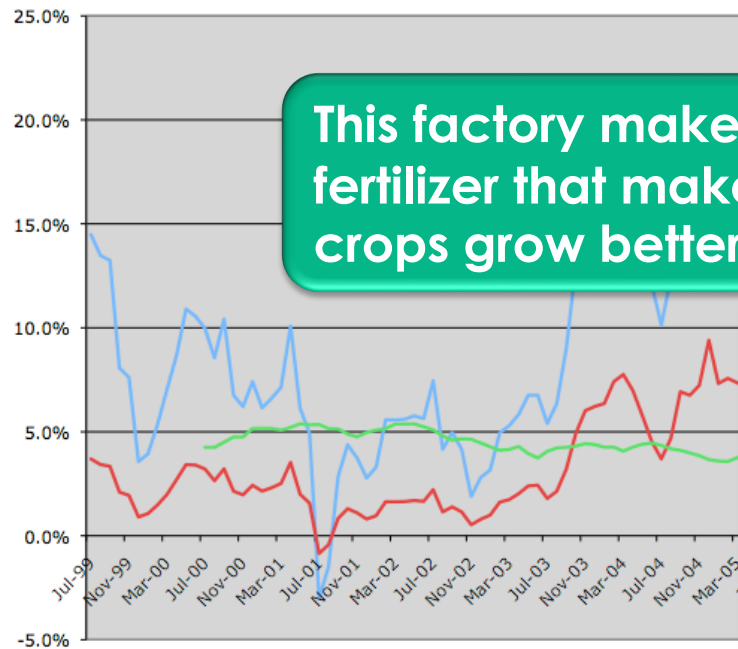
Date: 11 Jan 2012





Science and Money

AN plant returns compared to Euro Bond rates



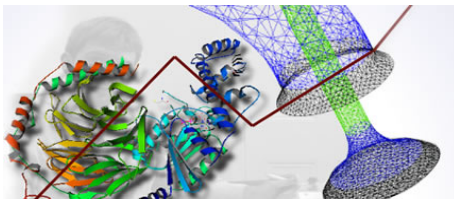
This factory makes fertilizer that makes crops grow better...

Ammonium nitrate: new plant investment

- Location not specified: could be EU, North Africa, CIS
- Typical project configuration
 - 2,400 tpd fertilizer ammonium nitrate (792,000 tpy at 330d/y)
 - Ammonia (1,000 tpd) and nitric acid (1,800 tpd) plants
 - No surplus ammonia or nitric acid
 - Similar to Abu Qir plant configuration (Egypt, 1991)
- Total project cost of US\$600 million (basis November 2007)

GAS PRICES - Russian				UK AN Prices		Capital costs	ROS/ROCE			Implied Risk Premium			
(ex Waidhaus)				(Converted to \$/tonne (\$m))		CEPCI Index	(Zero Depreciation)			AN Price Mean P S.Dev Risk			
	UNIT						Column	ROS	ROCE				
	\$/MMBtu												
1	Jul-99	1.62		138.50	430.28	378	Jul-99	30.7%	11.2%	Jul-99	138.5		
2	Aug-99	1.69		138.15	430.60		Aug-99	29.7%	10.8%	Aug-99	138.2		
3	Sep-99	1.68		137.19	430.92		Sep-99	29.6%	10.6%	Sep-99	137.2		
4	Oct-99	2.24		141.72	431.24		Oct-99	23.9%	8.8%	Oct-99	141.7		
5	Nov-99	2.18		138.76	431.57		Nov-99	23.8%	8.5%	Nov-99	138.8		
6	Dec-99	2.48		137.97	431.89	390.6	Dec-99	19.8%	7.0%	Dec-99	138.0		
7	Jan-00	2.78		147.55	432.21		Jan-00	19.1%	7.2%	Jan-00	147.6		
8	Feb-00	2.78		151.18	432.53		Feb-00	20.1%	7.8%	Feb-00	151.2		
9	Mar-00	2.72		153.98	432.86		Mar-00	21.5%	8.4%	Mar-00	154.0		
10	Apr-00	3.09		170.24	433.18		Apr-00	21.8%	9.4%	Apr-00	170.2		
11	May-00	2.91		171.71	433.50		May-00	23.9%	10.3%	May-00	171.7		
12	Jun-00	3.09		176.48	433.83	1%	Jun-00	23.2%	10.2%	Jun-00	176.5		
13	Jul-00	3.15		176.48	434.15	Inflation	Jul-00	22.6%	9.9%	Jul-00	176.5	165.5	19.2
14	Aug-00	3.08		169.77	434.47		Aug-00	21.7%	9.1%	Aug-00	169.8	166.2	18.5
15	Sep-00	2.88		169.34	434.80		Sep-00	23.5%	9.8%	Sep-00	169.3	167.0	17.6
16	Oct-00	3.40		174.15	435.12		Oct-00	19.5%	8.3%	Oct-00	174.1	168.0	16.6
17	Nov-00	3.45		174.02	435.45		Nov-00	19.0%	8.0%	Nov-00	174.0	168.9	15.7

- Can we afford to build new equipment/factories?
 - Important for wind turbines, solar panels, hospital equipment, new drugs



I've invented this does anyone want it?



- How difficult is it to make chiral intermediates?
- How do we get oncologists to trusts the results of a non-invasive scan?
- Can we accept any false positives or false negatives?
- What do diabetics think of having a glucose predictor on a PC?
- What are the things that really restrict the lives of people with diabetes?
- Would you prefer to buy or lease this piece of hardware?
- Would you pay more/less for a different spec product?

Is there anyone else I should be talking to.....?

MicroRNA 2008

Select Biosciences Limited

January 1, 2008

197 Pages - Pub ID: SBS1774166

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Chapter I. Executive Overview of the microRNA Space

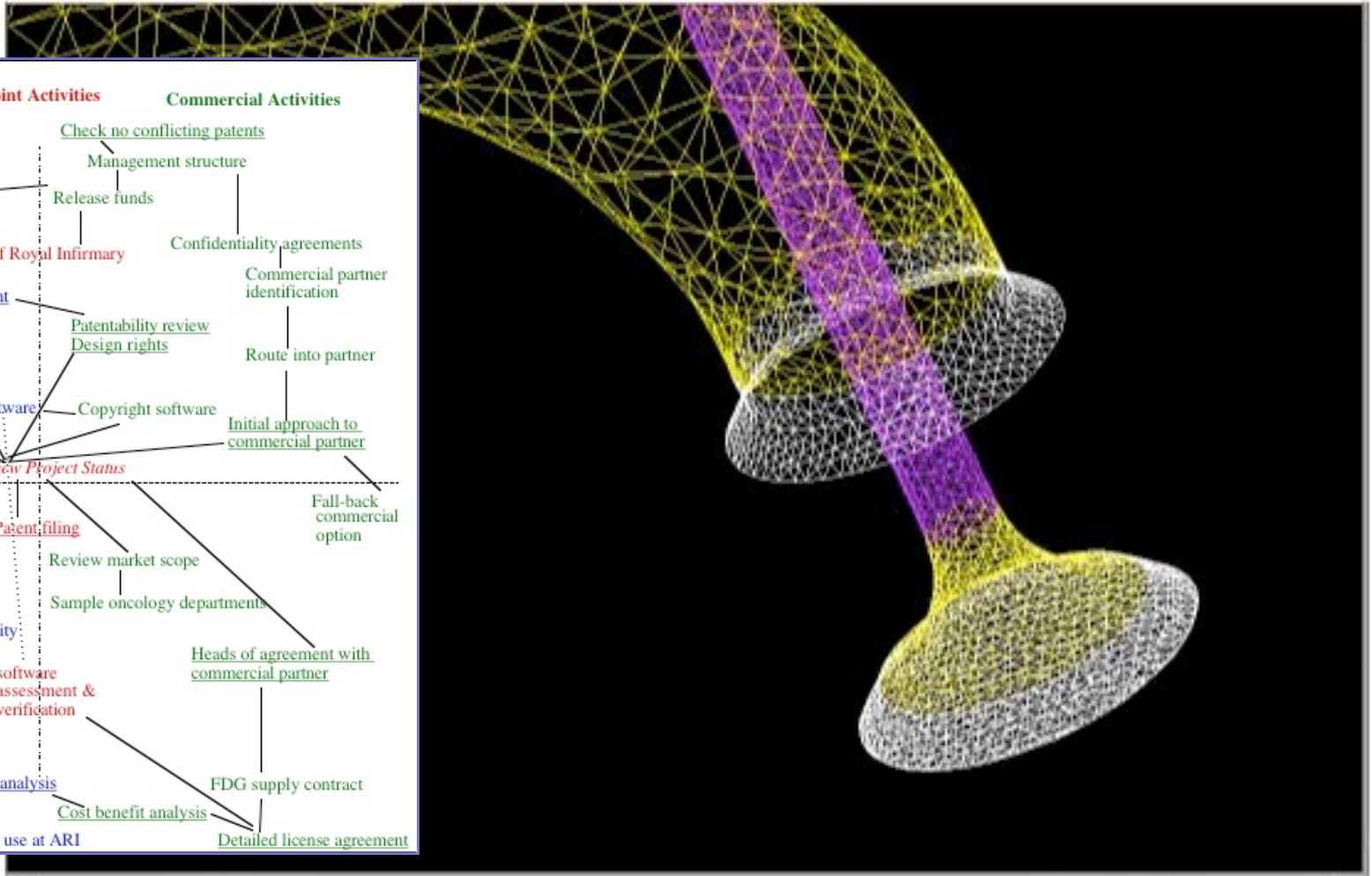
Introduction to microRNAs
 microRNA Biosynthetic Steps
 Precursor versus Mature microRNAs
 Mechanism of Action
 microRNAs and other Non-coding Small RNAs
 Comparison of microRNAs and siRNAs
 microRNAs Described in Various Species
 Criteria used to Identify Novel microRNAs
 Online Resources for microRNA Target Predictions
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 microRNAs Implicated in Disease
 microRNAs Associated with Human Cancer
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 Virus-encoded microRNAs
 microRNAs and their Targets
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 Growth and Evolution of the microRNA Space

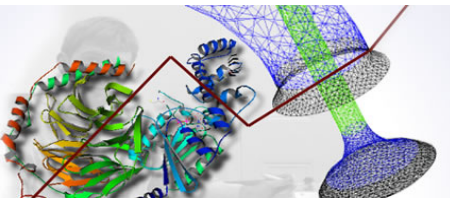
Chapter II. Products and Services for microRNA Research

Market Segments of microRNA Research
 Products and Services in Each Market Segment

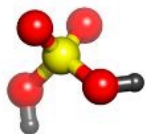
Chapter III. microRNA Market Analysis

microRNA Research Trends
 Market Segmentation
 microRNA Research Quantitative Metrics (Nr. Of Experiments Performed, Growth)
 microRNA Expression Profiling Marketplace



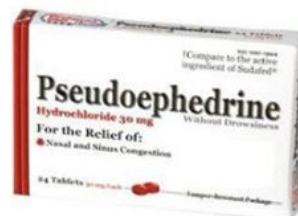
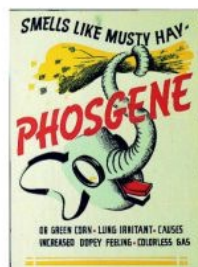


People are doing these things, shouldn't that be against the law?

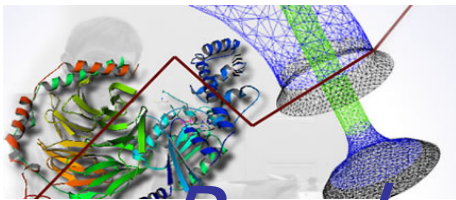


Chemical dual-use awareness

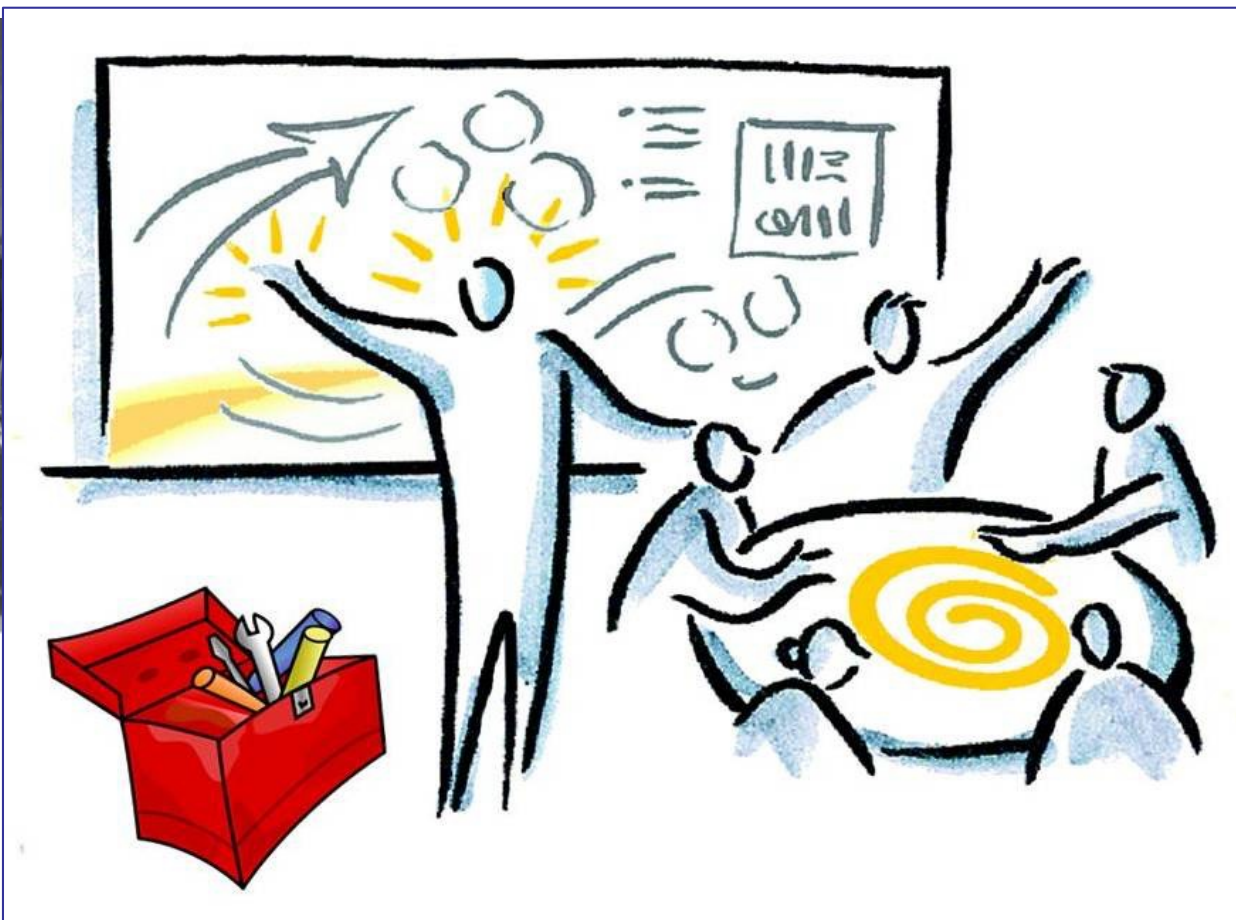
Dual use chemicals: Chemicals that can be used for both legal and illegal purposes.

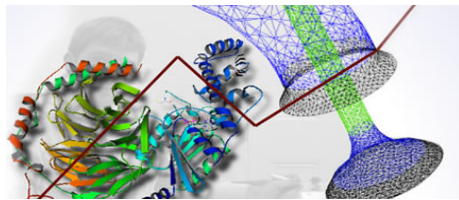


60



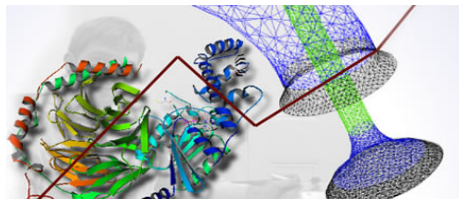
People are arguing about something, can I stop them shouting at each other?





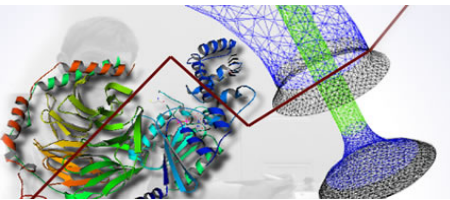
Universities are Businesses as well





Science Advisor to Banks...





Science Advisor to Banks...

- Carbon 'Burn it all' study – 'stranded assets'
 - <https://www.zyen.com/research/research/sustainability/carbon-burn-it-all/>

Carbon - Burn It All?!

"What happens if we burn it all?" (i.e., burn all known reserves on balance sheets) is the question Michael Mainelli and Jan-Peter Onstwedder asked the BP and London Accord teams back in 2006, based on the concern that finance was not valuing carbon properly. Z/Yen's Dr Kevin Parker (ex BP chemist) pulled together the spreadsheet "Global Warming", for the total ppm results of burning current known reserves. Jan-Peter Onstwedder had a look from the point of view of the head of risk at BP. BP's research team did their own digging and both sides effectively came up with the same numbers.

Current CO2 (ppm)	370
Amount if all oil burnt	619
Plus tar sands	629
Plus coal	946
Plus Gas	1222

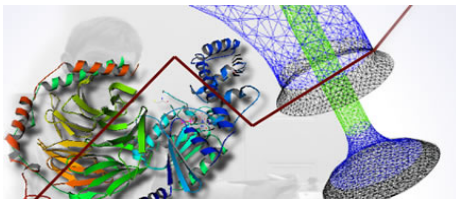
Figure 1 - CO2 levels caused by burning known fossil fuel reserves

- Government 'green performance bonds'
 - <https://www.zyen.com/research/research/sustainability/policy-performance-bonds/>

Index-linked Carbon Bonds: Guilty Green Government

By Professor Michael Mainelli, Jan-Peter Onstwedder, Kevin Parker, William Fischer
Published by Z/Yen Group Limited (April 2009).

The idea was first formally presented by Dr Kevin Parker of Z/Yen at the World Bank Government Borrowers' Forum in Ljubljana in May 2009. The same idea can be used for index-linked forestry bonds on forestry cover, etc. Since first mooted by Long Finance in 2008 & 2009, the private sector began issuing these bonds, tying interest rates inversely to performance against the achievement of environmental, social, or governance goals (our touchstone, as opposed to saying the proceeds will be used for ESG purposes), in 2017. The terms "sustainability-linked finance" or "positive incentive loan" are sometimes used:

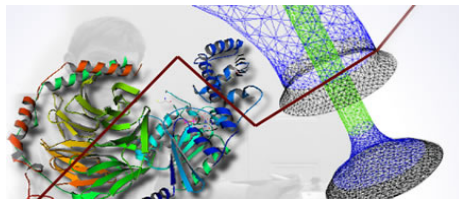


These days...



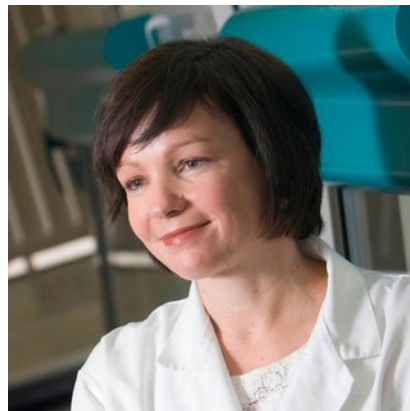
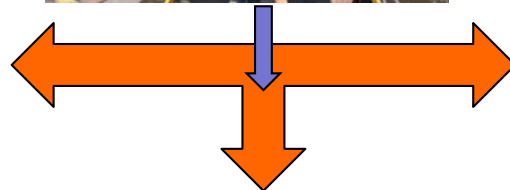
I turn students ...

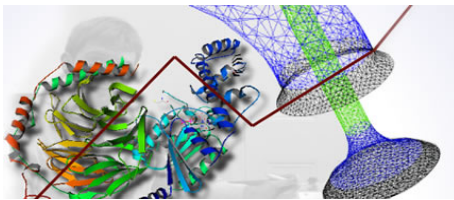




These days...

... into successful entrepreneurs

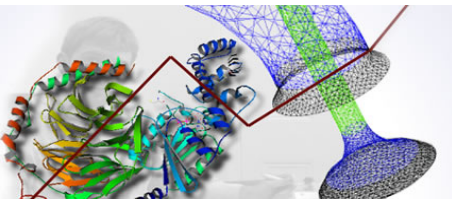




Some KKI Clients

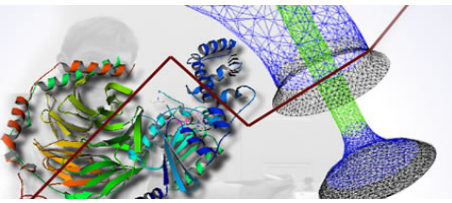
*Freelance, Home-based Working for 25 years
500+ assignments across the UK and beyond
Trained 3000+ people*



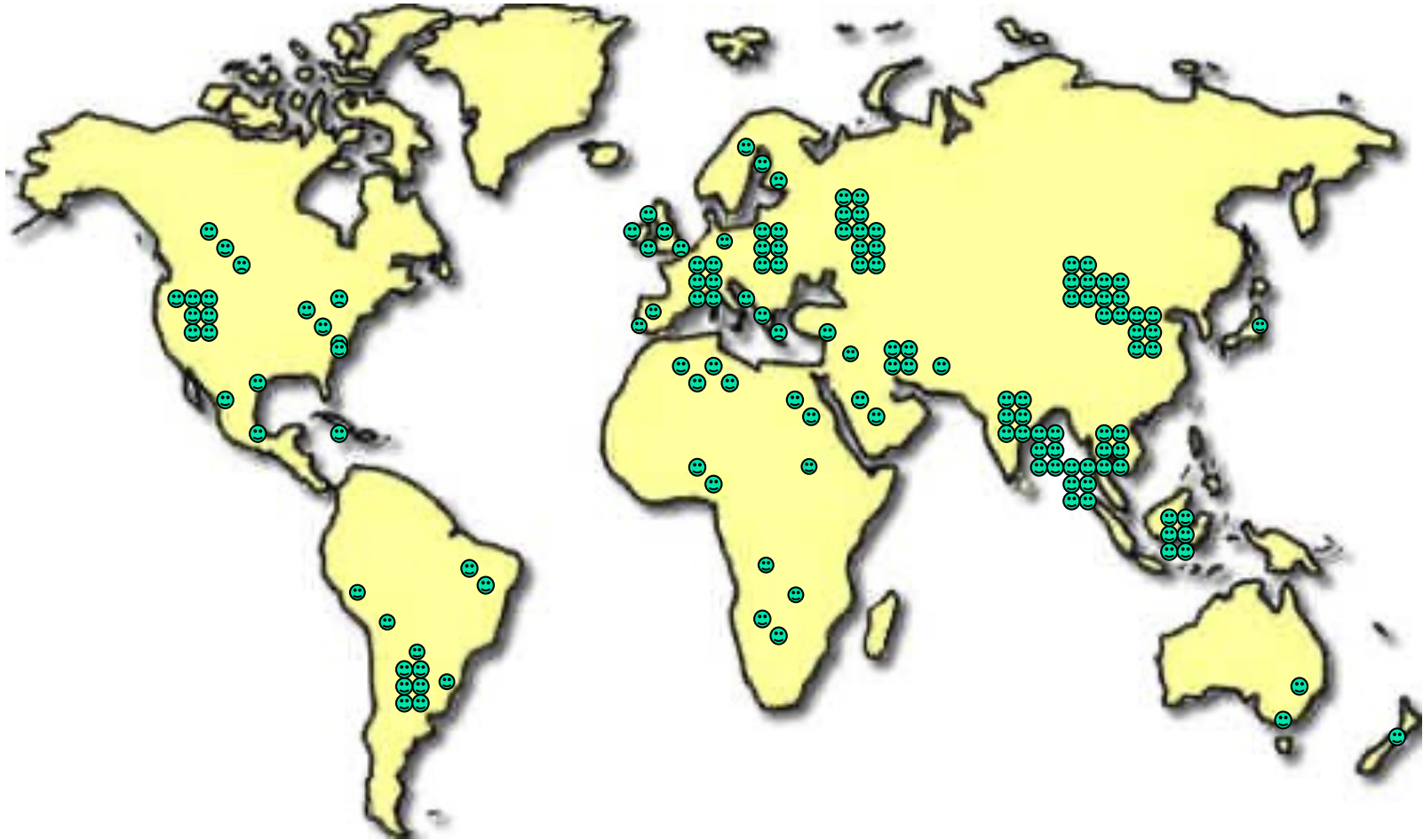


I've Worked in these places





*I've Worked with People from
these places*



Something to try: 'Three Minute Thesis' Videos

http://threeminutethesis.org/

YouTube Apple Amazon eBay Search Work Travel and Weather Music Scouts News Support C/PBL



2014 UQ 3MT Winner - Megan Rossi

Three Minute Thesis (3MT®) is a research communication competition developed by The University of Queensland which challenges research higher degree students to present a compelling oration on their thesis and its significance in just three minutes in language appropriate to a non-specialist audience.

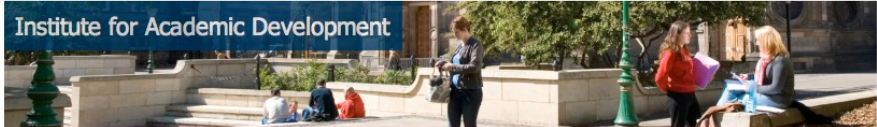
Overview | International 3 Minute Thesis competition

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International 3 Minute Thesis competition

Overview

Information for individuals and colleges about the 3 Minute Thesis competition.

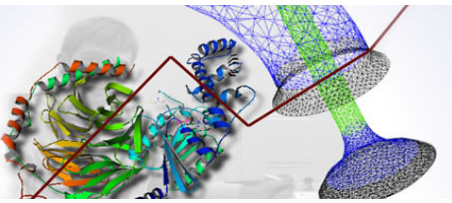
Well done Emma

After successfully competing in the UK final of the 3 Minute Thesis competition in Manchester, Emma Hodcroft (the winner of the University of Edinburgh competition) competed in the Universitas 21 Competition, and came 3rd in the people's choice vote.

> Universitas 21 3MT competition - watch the competitors

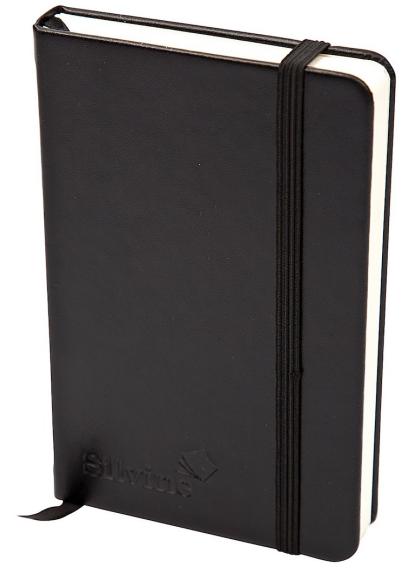
<https://www.youtube.com/watch?v=vkCNUPJ-OIM>

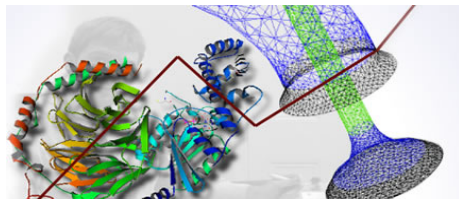
Can you find out what Emma is doing now!?



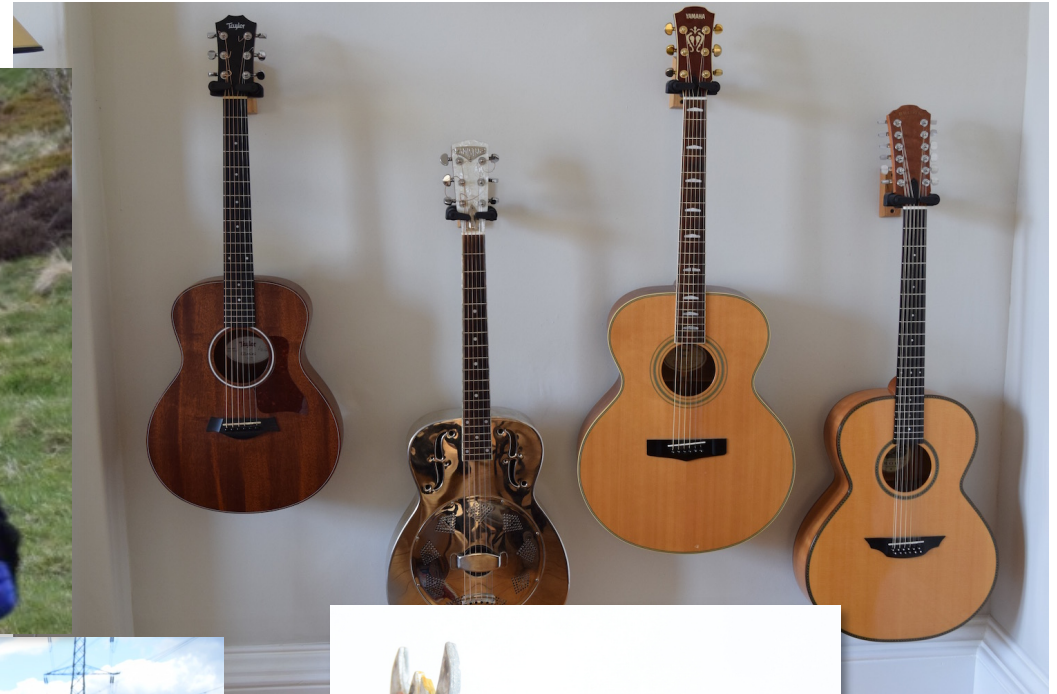
Things that helped me Work from Home

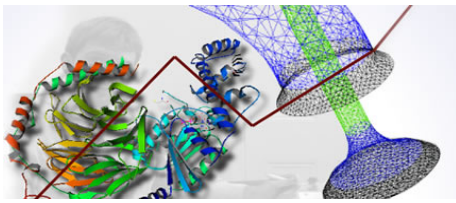
- 'Journey to Work'
 - School run, or just 'walk round the block'
- Set up as good an 'work space' as you can
- Have 'to-do' lists
- Have a really good Hobby!





My Hobbies





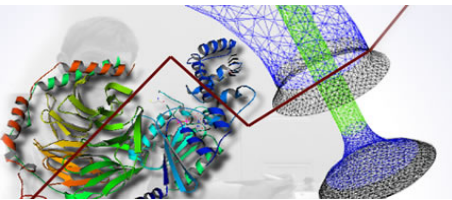
A Career in Science and Beyond

THE END

QUESTIONS?

■ TAKE LOTS OF EXERCISE

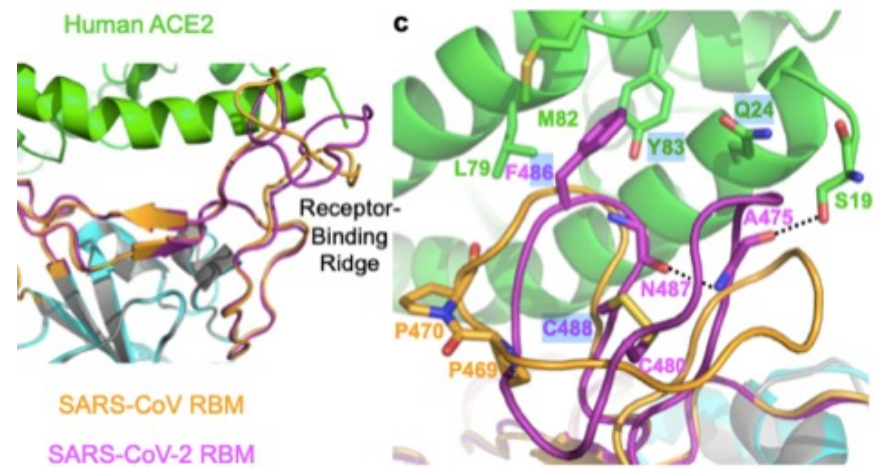
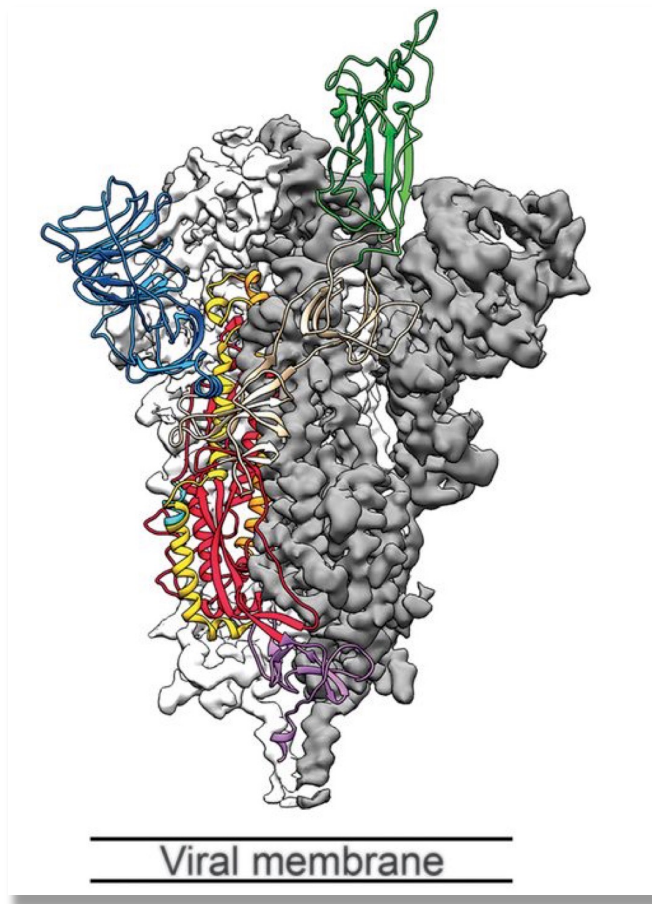
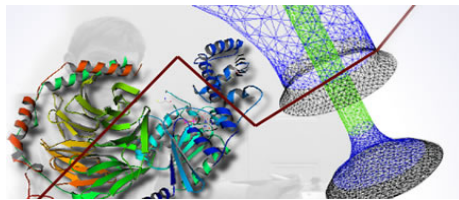
be and look healthy

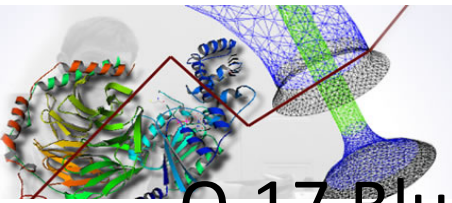


Things we can find out by asking

- How difficult is it to make chiral intermediates?
- How do we get oncologists to trusts the results of a non-invasive scan?
- Can we accept any false positives or false negatives?
- What do diabetics think of having a glucose predictor on a PC?
- What are the things that really restrict the lives of people with diabetes?
- Would you prefer to buy or lease this piece of hardware?
- Would you pay more/less for a different spec product?

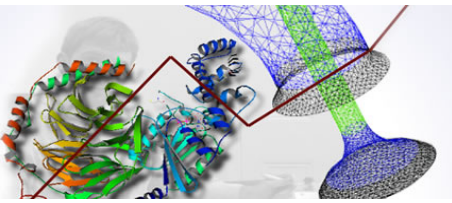
Is there anyone else I should be talking to.....?



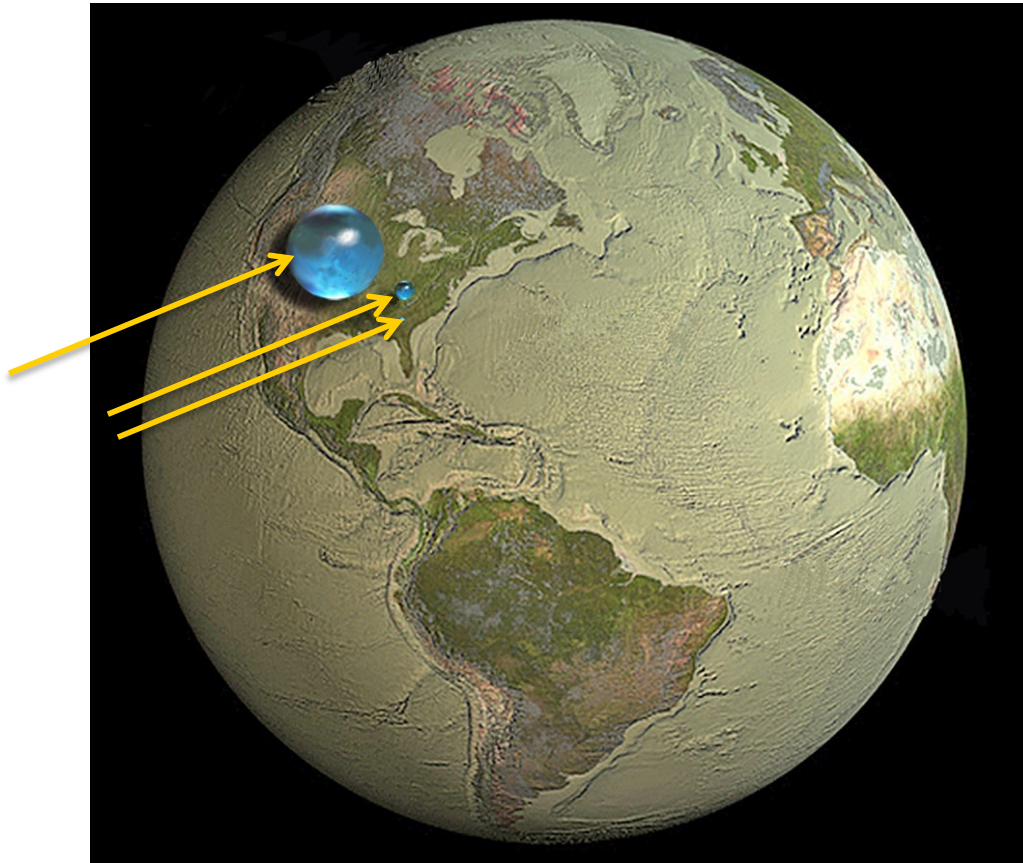


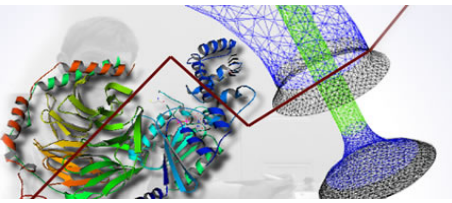
Q.17 Bluetongue is a tropical viral disease that affects cattle. How does it evidence global warming? (1)





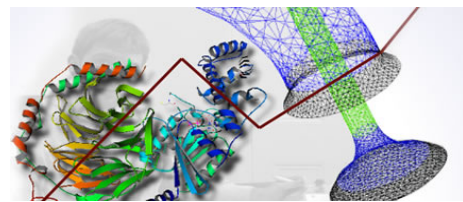
Q.1 What do the three spheres in this graphic represent?
(3)





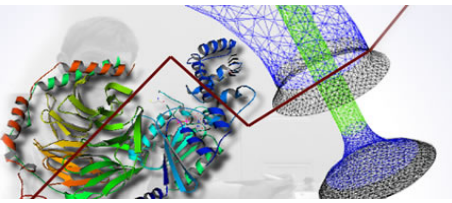
Q.4 If I want to fuel a Boeing747 with biofuel made from rape seed oil, how many (football pitches) of crop would I need to grow enough to fill the tank? (1)





Q.6 Solar PVC cells will generate more energy on a summer's day in Scotland than in the Sahara.
Why? (1)





Q.4 If I want to fuel a Boeing747 with biofuel made from rape seed oil, how many (football pitches) of crop would I need to grow enough to fill the tank? (1)

250 km²

250 hectares

1 sq mile

467 football pitches

