SPECTROMICS

Point-of-Care diagnostic to guide the use of antibiotics

- **A 10 minute test used at the “Point-of-Prescription”**
- **Phenotypic susceptibility based**
- **Selecting the right antibiotic for each patient**

http://www.spectromics.com/

1 Company, Management & Investment

Spin out from University of Manchester, April 2014

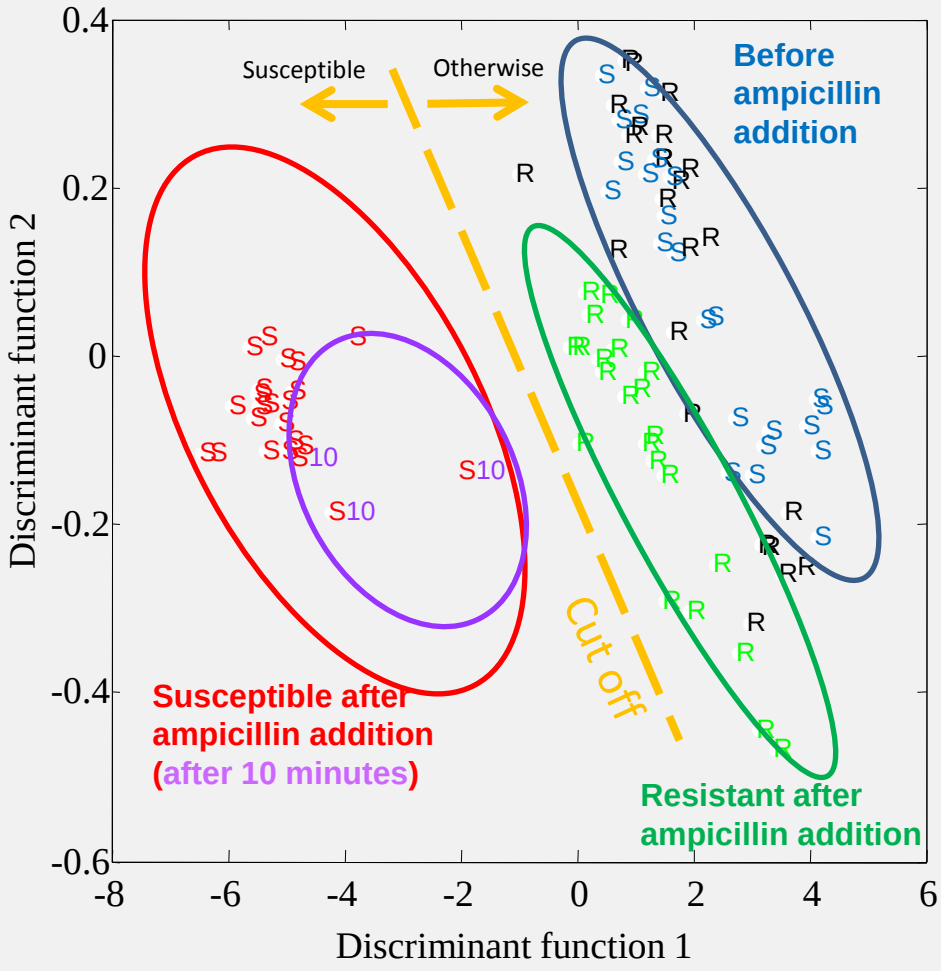
Technology Founders:

Roy Goodacre	Professor of Biological Chemistry, Manchester
Mat Upton	Associate Professor in Medical Microbiology, Plymouth

Other Directors:

Neil Butler (Chairman)	Atlas Genetics (prev. Vivacta/Novartis)
Ian George	New Wave Ventures

2 Technology - fundamentals



- Spectroscopy & chemometrics to differentiate susceptible (S) from resistant (R)
- Demonstrated with large collections of *E. coli* & also with other genera

Positive Predictive Values (susceptibility)		
	FT-IR (75 min)	UV-Vis (30min)
Ampicillin	90.6%	88.66%
Trimethoprim	89.4%	92.47%
Ciprofloxacin	98.4%	98.21%

- Method optimisation on-going
- Discussing instrument development

3 Product design – System

- Small footprint
- Low power, battery operated

- Carried out within the doctor-patient consultation window – tailored prescription for all UTI cases

4 Product design – UTI menu

Improved stewardship – test will bring retired drugs back into play

- Use old (opportunistic) drugs first,
- Take pressure off front line drugs & preserve last line drugs

	Antimicrobial	Relevance	Resistance	Dose	US Cost	
					Per day	Per treatment
Opportunistic	Amoxicillin	Past 1st line β lactam	Circa 50%	500 3x 10 days	$1.50	$15.00
	Tetracyclines	Early	Circa 40%	250 4x 7-10 days	$1.50	$10-15.00
Current First line drugs	Trimethoprim-sulfamethoxazole	TMP-SMX is 1st line	30% in some populations	Oral: 160/800 2x, 5days	$3.88	$19.40
	Nitrofurantoin	1st line after TMP-SMX	Low	Oral 100 2x 7-10 days	$17.13	$120-171.30
Nationally licensed	Fosfomycin	1st line US and Spain	Low	Oral 3g single	$36.49	$36.49
Second line	Cephalasporin		Growing	500 2x 7-10 days	$6.50	$45.50-65.00
	Ciprofloxacin	hospitalised – complicated UTI	11-50%	Oral 250 2x 3days	$10.15	$30.45
	Co-amoxiclav	complicated UTI/pyelonephritis	5-10%	3-7 days	$17.87	$53.61-125.09

5 Product design – System

Trend Analysis:
Local epidemiology data for up to 8 antibiotics per test

This data is of value to:
Epidemiologists and anti-infective drug developers

Request resistance data by application:
- Local to instrument
- Local to LAN eg. Oxford, UK, or EU
- Global for all networked instruments

All data has consistency due to common cartridge format, measuring like for like globally

6 Competitive technologies

		Turnaround time	Genotype or Phenotype	Consumable COG	Instrument COG	Setting
Lab methods used today						
Culture Disc diffusion		24hrs +	Phenotype	$1	$10k	Lab
Closed tube broth dilution		5- 8 hrs	Phenotype	$1	$30k	Lab
Mass Spec		<1 hr, in future?	Phenotype	$1	$500k	Lab
Mol Dx		Circa 1 hr	Genotype	$5+	$30k	Lab / decentralised
Technologies in development/early use				Clear differentiation, allowing use at Point-of-Prescription		
Spectromics		10 mins	Phenotype	$1	$1.5k	PoC or Lab
Accelerate Dx		6 hrs	Phenotype	$6	$30k	Lab
GeneWeave		4 hrs	Phenotype	$2	$30k	Lab
FirstLight Bio		3hrs	Phenotype	$2	$30k	Lab

SPECTROMICS

A SMARTER APPROACH TO TACKLING MICROBIAL RESISTANCE TO ANTIBIOTICS

Innovative point-of-prescription test for bacterial infections
that guides the treatment of antibiotics