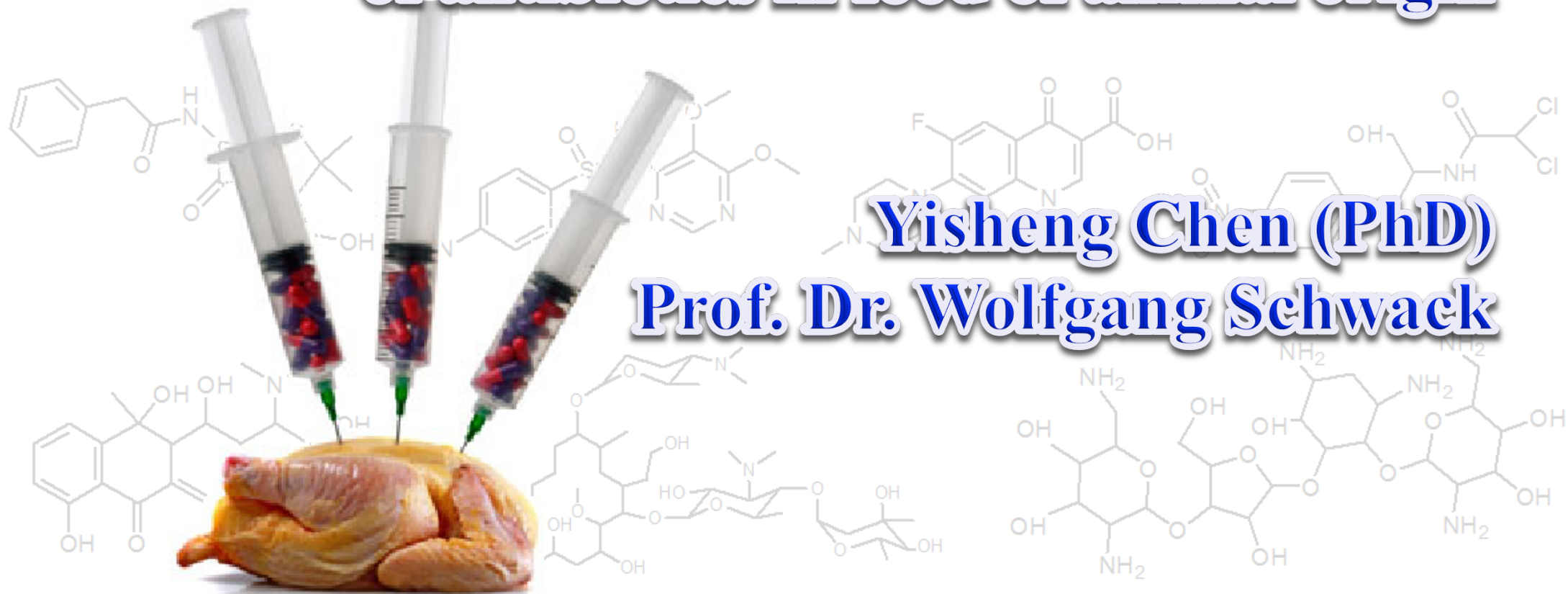


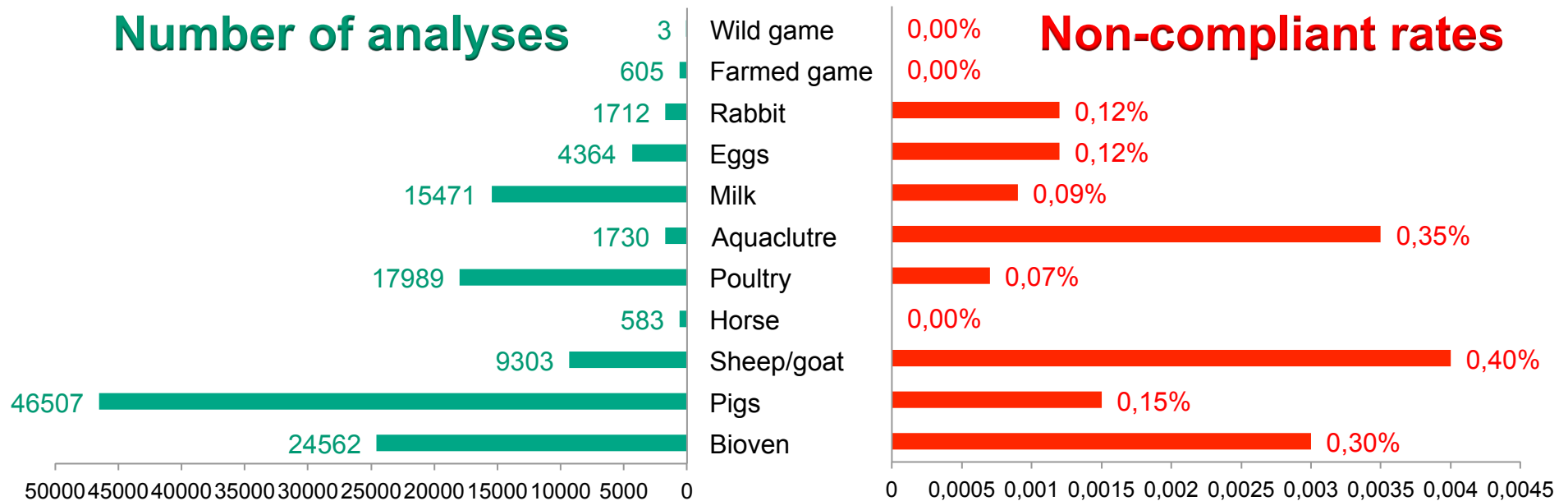
HPTLC-bioluminescence screening for residues of antibiotics in food of animal origin



Yisheng Chen (PhD)
Prof. Dr. Wolfgang Schwack

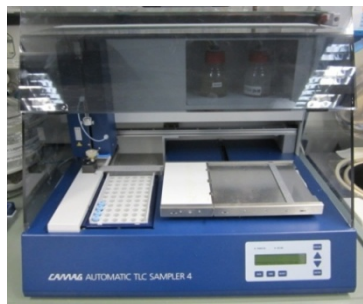
Research background

Reports for 2011 on the veterinary antibiotics monitoring program in EU



Therefore, the dramatic contrast between enormous sampling numbers and constantly low non-compliant rates (<0.5 %) implies that screening-oriented methods a highly required.

Our strategy: screening-oriented



Application



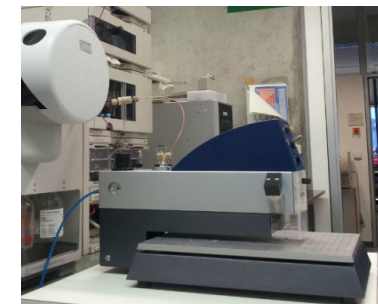
Development



Dipping &
Incubation

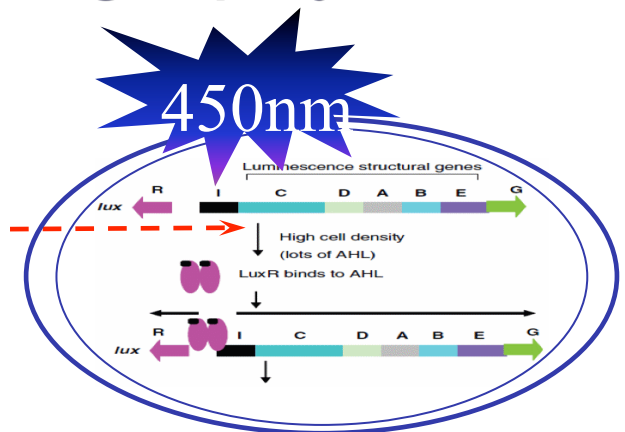
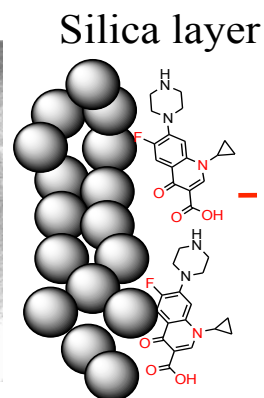
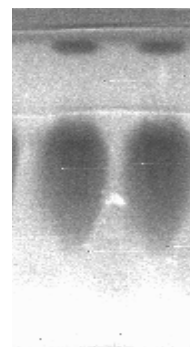
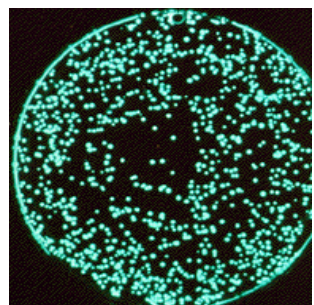


Detection



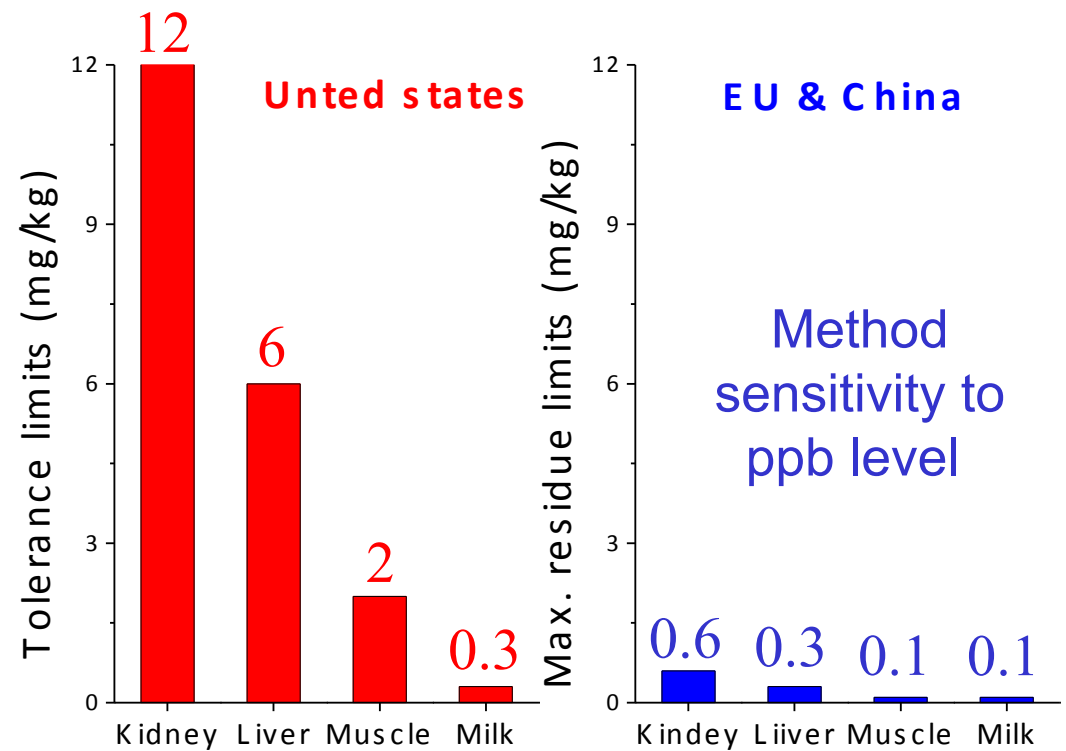
Confirmation

HPTLC+Bioluminescent bioautography



Challenges faced in screening

- 1 Demanding sensitivity
- 2 Poor separation
- 3 Bio-active matrix

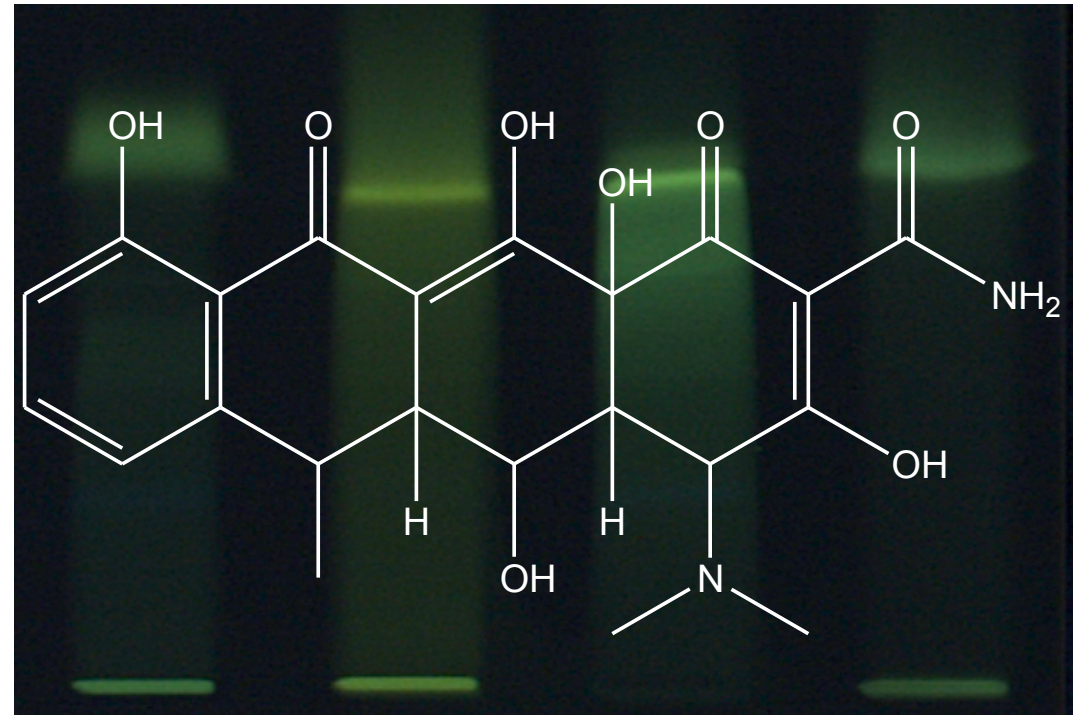


Challenges faced in screening

1 Demanding sensitivity

2 Poor separation

3 Bio-active matrix

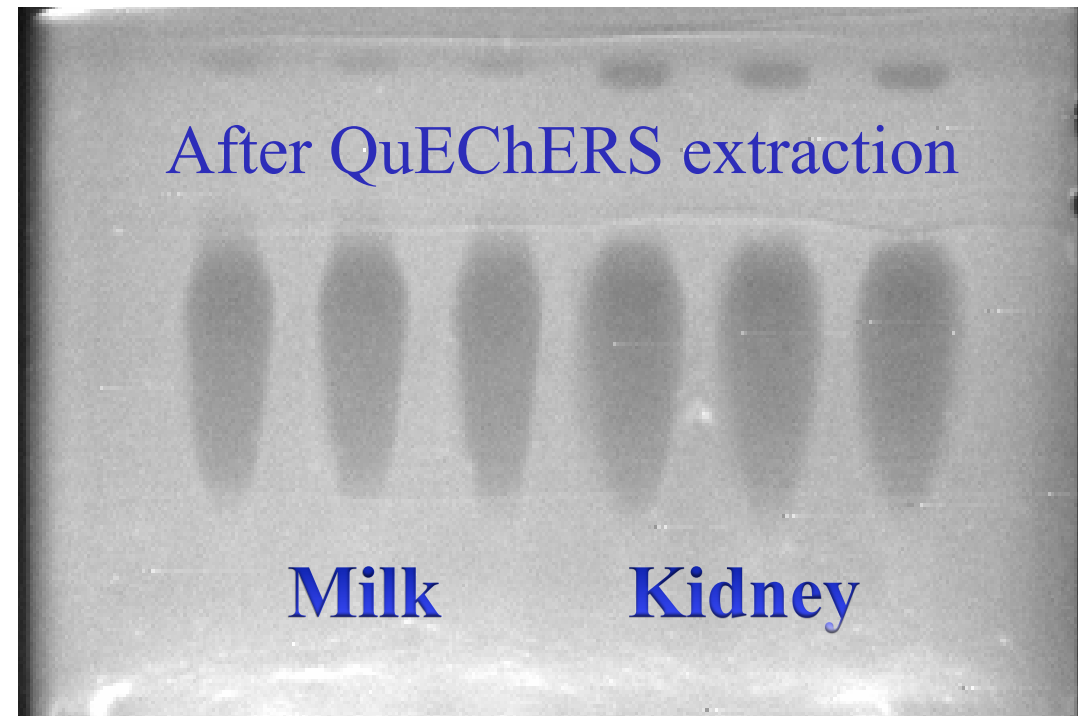


Challenges faced in screening

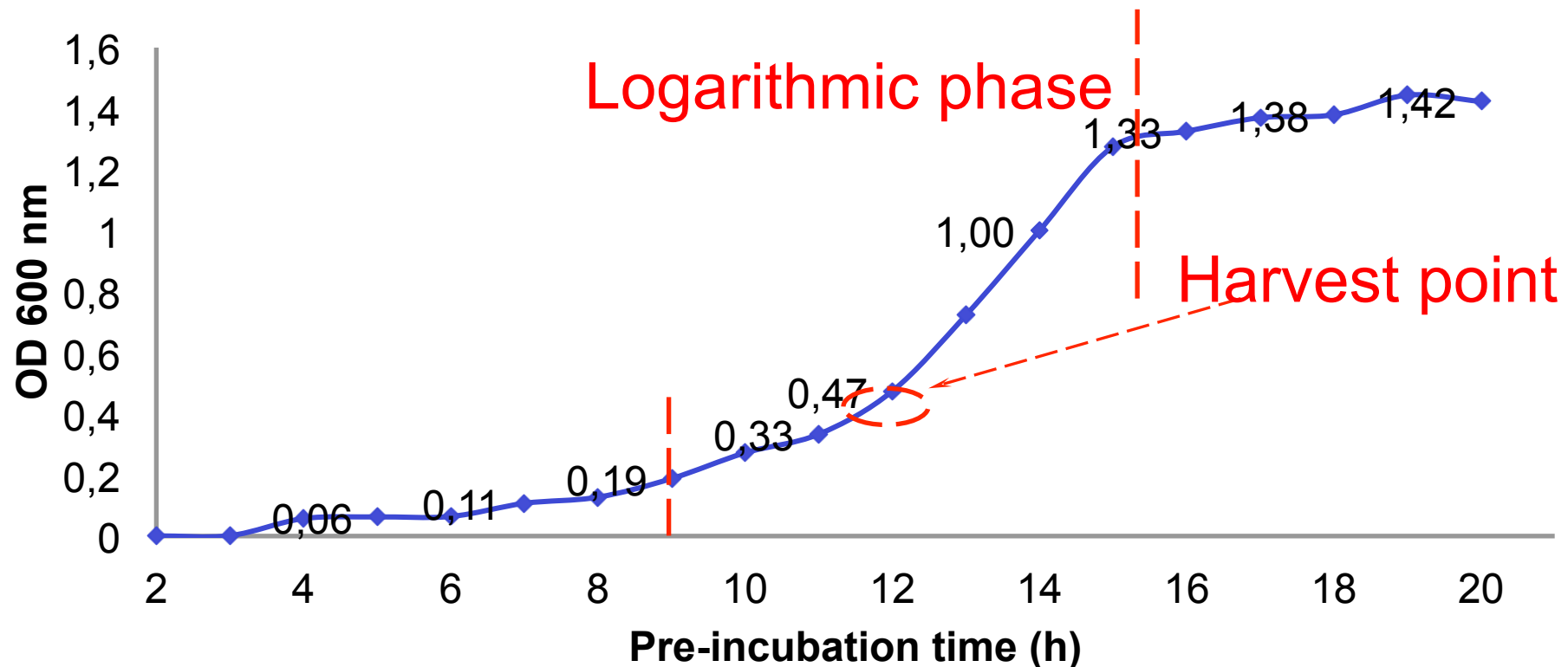
1 Demanding sensitivity

2 Poor separation

3 Bio-active matrix

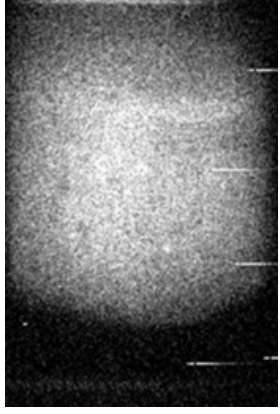
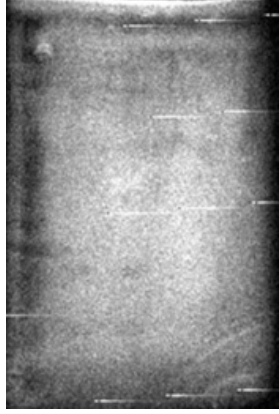
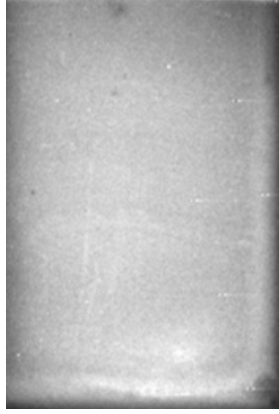
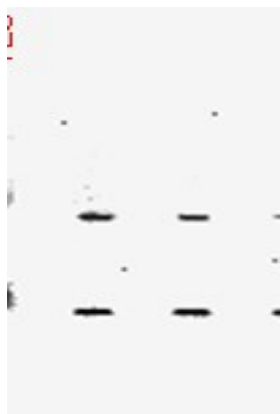
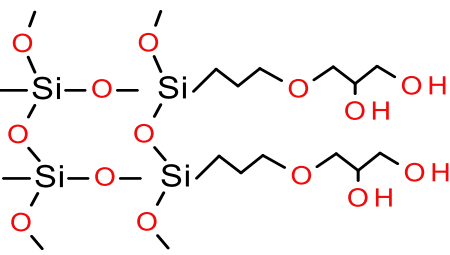
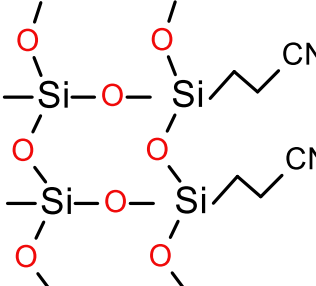
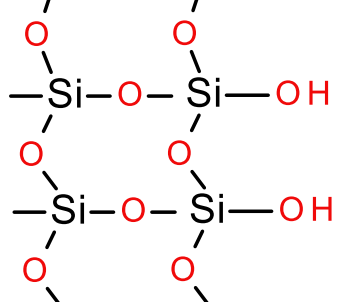
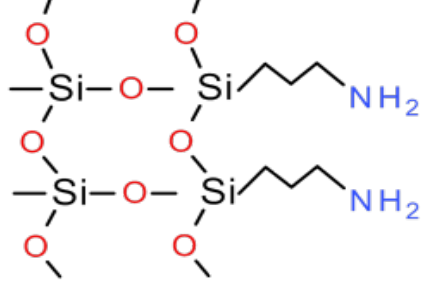


Detection optimization



Active cells were used

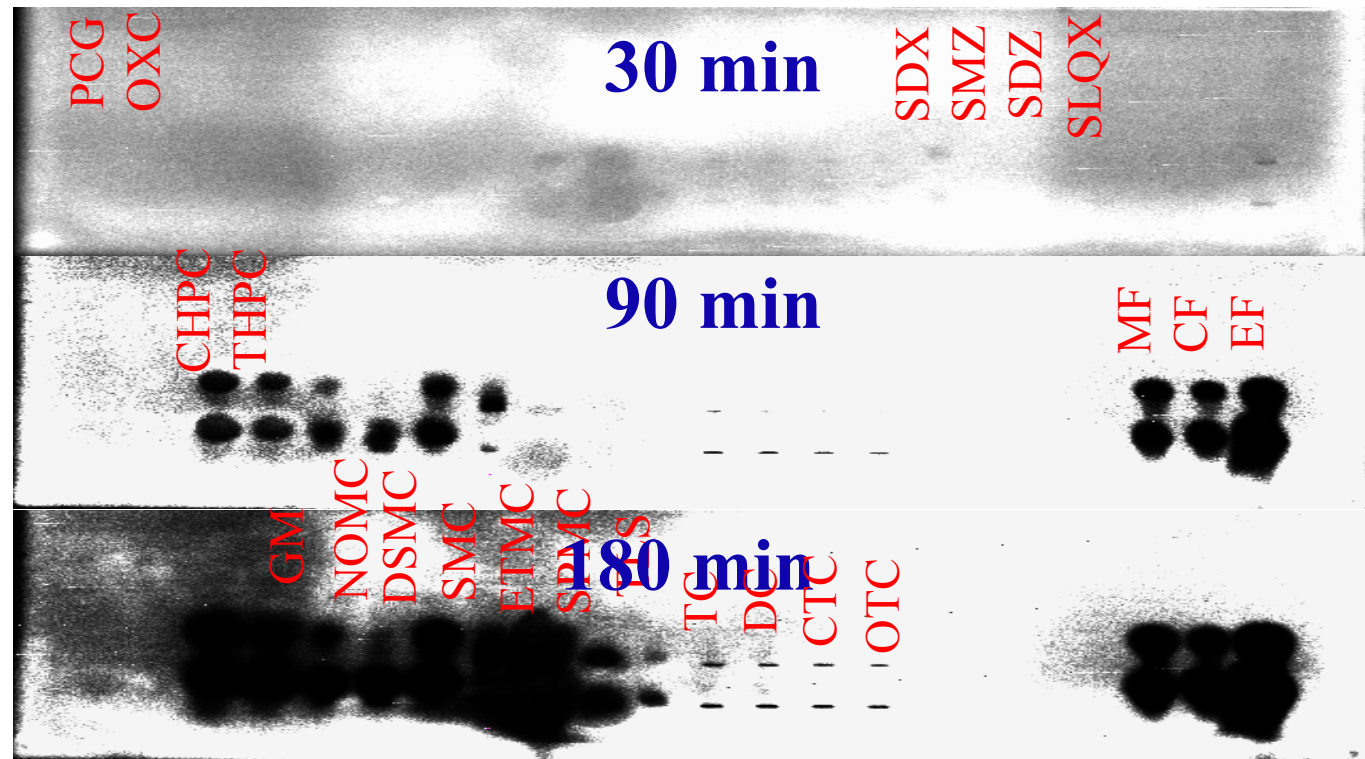
Detection optimization

Diol F _{254S}	CN F _{254S}	Silica F ₂₅₄	NH ₂ F _{254S}
			
			

Screening on bio-compatibility of HPTLC Layers

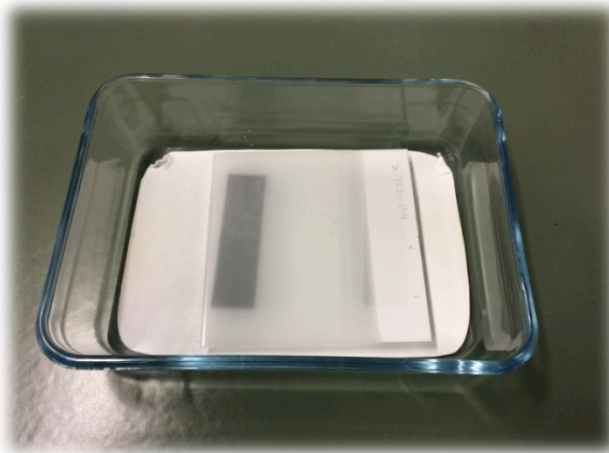
Detection optimization

Time-dependent cytotoxicity of antibiotics below the acute lethal level.

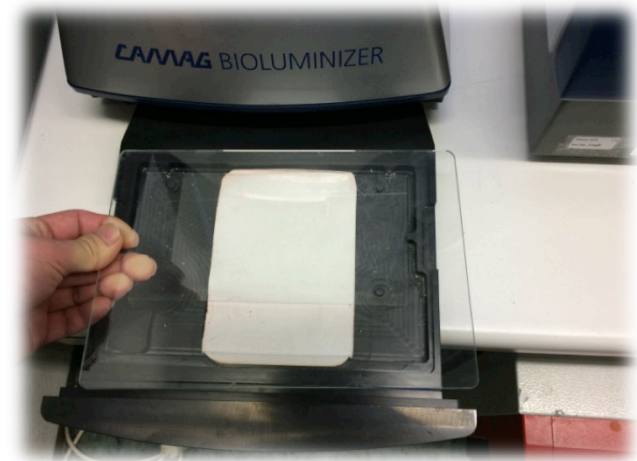


Detection optimization

Layer moisture is a vital factor for living bacteria!



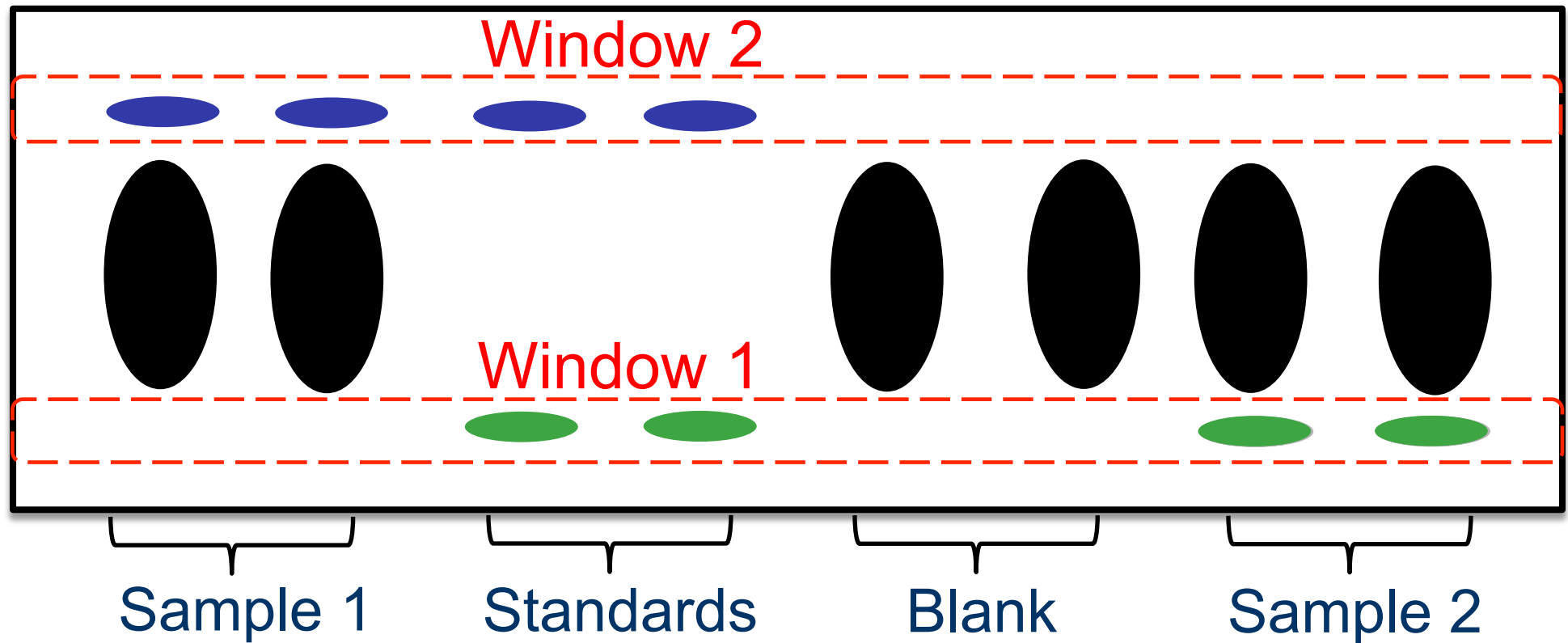
Incubation chamber



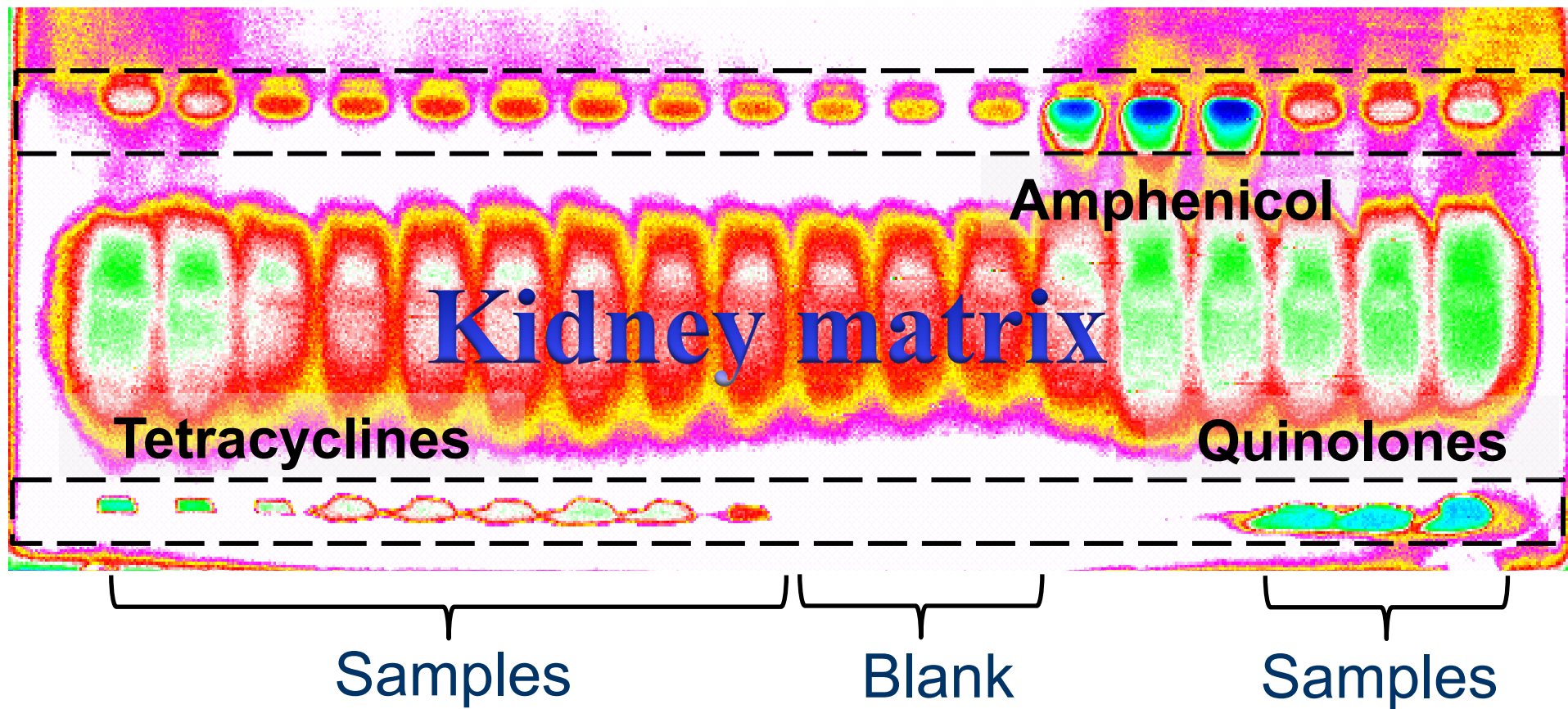
Detection chamber

Window separation

- Bioactive matrix
- Nonpolar analyte
- Polar/tailing analyte

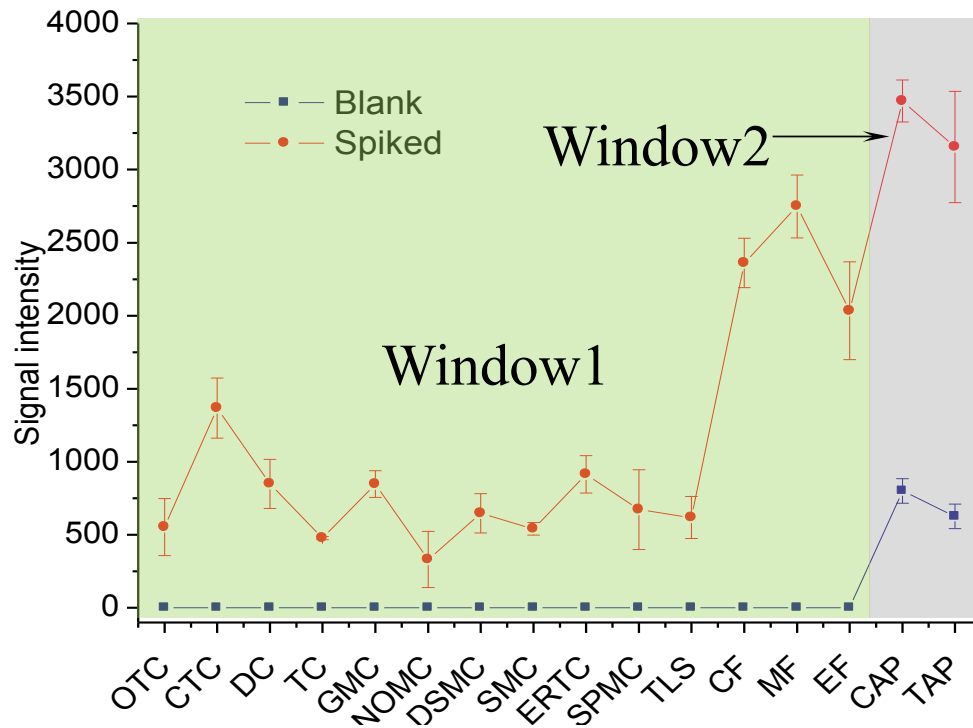


Window separation

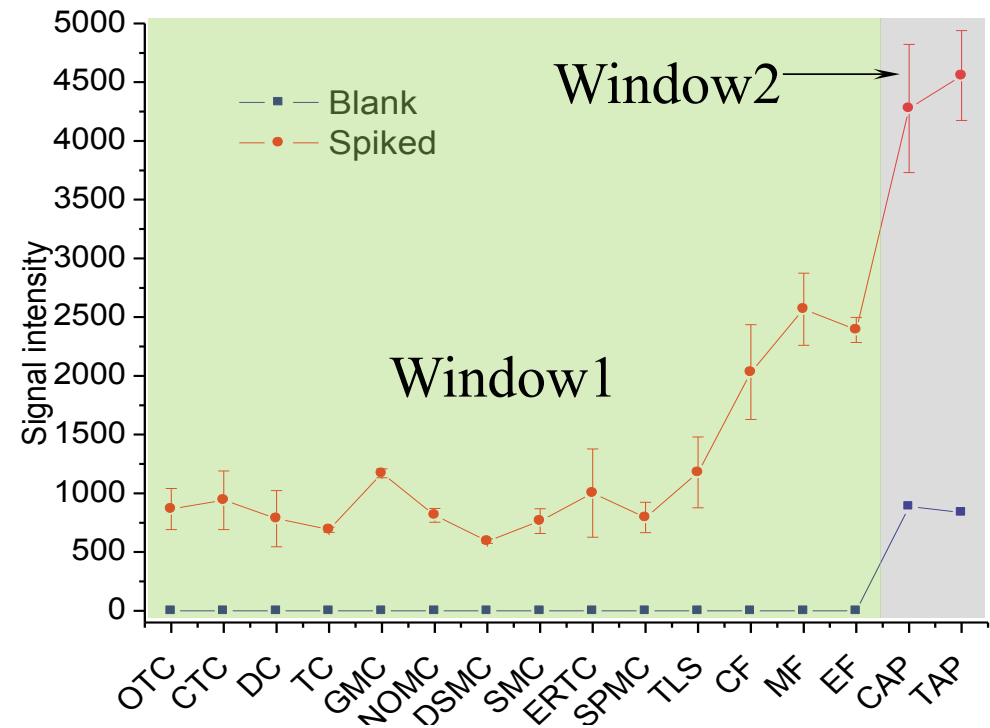


Real sample application

Milk



Kidney



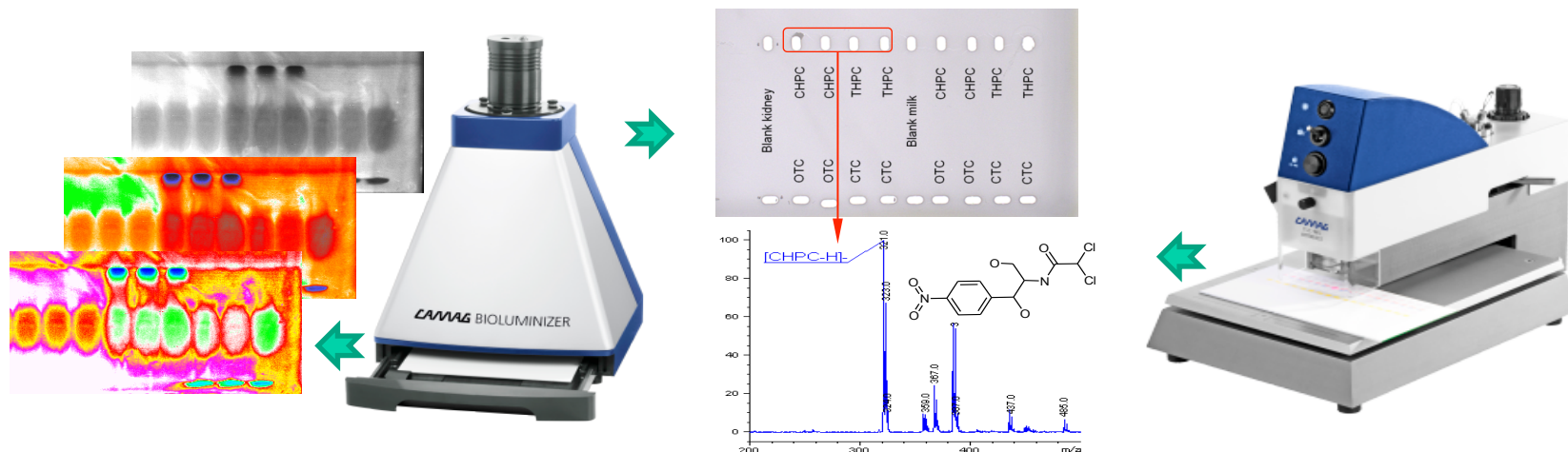
Detection spectrum

Group	Milk		Kidney	
	Biolum	Premi®*	Biolum	Premi®*
Tetracyclines	☺	☹	☺	☹
Quinolones	☺	☹	☺	☹
Amphenicols	☺	☹	☺	☹
Macrolides	☺	☺	☺	☺
Aminoglycosides	☺	☺	☺	☺
Penicillines	☹	☺	☹	☺
Sulfonamides	☹	☺	☹	☺

* H Cantwell, Food Additives and Contaminants 23 (2006) 120.

Conclusion

Parameters	Biolum	Premi®
Media	Amino F ₂₅₄ S plates	Agar tubes
Operation	Automatic	Manual
Quantitation	Semi-quantitative	Semi-quantitative
chromatography	Yes	N/A
MS compatibility	Yes	N/A





Thank you for your attention!

International Symposium for Thin-Layer Chromatography



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