



## Ruthenium antimicrobial compounds: a novel treatment for multi-drug resistant infections

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### Abstract:

Transcriptional variability is necessary for normal gene expression but it is also a liability when the gene profiles generated are cancer profiles. This is true for DNA transcription as well as RNA translation. Methylation can interfere with transcription and alter micro RNA translation or cleave RNA. This can lead to cellular transformation and tumorigenesis as in HPV. Viral oncogene methylation can repress tumor suppressor genes. We also see epigenetic potential of known carcinogens and mutagens needs to be assessed and included in carcinogen determinations and their regulation. Generational heritability also needs assessment.

### Biography:

Kirsty Smitten is a final year Chemistry and Microbiology PhD student at The University of Sheffield. Her research is on the development of ruthenium antimicrobial compounds to treat pathogenic, multi-drug resistant bacteria. The compounds she has developed during her PhD are active on multi-drug resistant bacteria including those strains identified by The World Health Organization as Priority 1: Critical. Kirsty is currently pursuing the commercialization of her antimicrobial compounds through the Innovate UK funded “innovation to commercialization of university research” ICUR programme. She has presented her research at international conferences and received several awards including The Ernst Young sponsored Nova Prize for exceptional early-career contribution to STEM and Forbes 30 Under 30 in Science and Healthcare. In addition, Kirsty was interviewed on CBS News and BBC Radio 5 Live about her research. More recently Kirsty has started a scientific blog, the posts include a superbugs under the spotlight mini-series in an effort to increase public awareness on antimicrobial resistance.



### Publication of speakers:

1. O'Neill, J. The Review on Antimicrobial Resistance; 2016.
2. World Health Organisation. Antimicrobial Resistance Global Report on Surveillance; 2014.
3. World Health Organisation. Global Priority List of Antibiotic-Resistant Bacteria to Guide Research, Discovery and Development of New Antibiotics; 2017.
4. Centre for Disease Control and Prevention. 2019 AR Threats Report; 2019.
5. Smitten, K. et al. ACS Nano; 2019, 13, 5133-5146.
5. Smitten, K. et al. ACS Nano; 2019, 13, 5133-5146.
6. Smitten, K. et al. Chem. Sci; 2020, 11, 8828

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