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Search and rescue: tackling antibiotic resistance with chemistry

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List of Publications

Publications during doctoral research

- (1) Tehrani, K. H. M. E.; Bröchle, N. C.; **Wade, N.**; Mashayekhi, V.; Pesce, D.; van Haren, M. J.; Martin, N. I. Small Molecule Carboxylates Inhibit Metallo- β -Lactamases and Resensitize Carbapenem-Resistant Bacteria to Meropenem. *ACS Infect. Dis.* **2020**, *6* (6), 1366–1371.
- (2) van Haren, M. J.; Tehrani, K. H. M. E.; Kotsogianni, I.; **Wade, N.**; Bröchle, N. C.; Mashayekhi, V.; Martin, N. I. Cephalosporin Prodrug Inhibitors Overcome Metallo- β -Lactamase Driven Antibiotic Resistance. *Chem. - A Eur. J.* **2021**, *27* (11), 3806–3811.
- (3) **Wade, N.**; Tehrani, K. H. M. E.; Bröchle, N. C.; van Haren, M. J.; Mashayekhi, V.; Martin, N. I. Mechanistic Investigations of Metallo- β -Lactamase Inhibitors: Strong Zinc Binding Is Not Required for Potent Enzyme Inhibition**. *ChemMedChem* **2021**, *16* (10), 1651–1659.
- (4) Tehrani, K. H. M. E.; **Wade, N.**; Mashayekhi, V.; Bröchle, N. C.; Jespers, W.; Voskuil, K.; Pesce, D.; Van Haren, M. J.; Van Westen, G. J. P.; Martin, N. I. Novel Cephalosporin Conjugates Display Potent and Selective Inhibition of Imipenemase-Type Metallo- β -Lactamases. *J. Med. Chem.* **2021**, *64* (13), 9141–9151.
- (5) **Wade, N.**; Wesseling, C. M. J.; Innocenti, P.; Slingerland, C. J.; Koningstein, G. M.; Luirink, J.; Martin, N. I. Synthesis and Structure–Activity Studies of β -Barrel Assembly Machine Complex Inhibitor MRL-494. *ACS Infect. Dis.* **2022**, *8* (11), 2242–2252.

Patents during doctoral research

- (1). 2019 Dutch Patent application filing; Title: “Prodrug metallo-beta-lactamase inhibitors.” Inventors: Martin, N.I.; van Haren, M.J.; Tehrani, K.H.M.E.; Kotsogianni, I.; **Wade, N.** Priority date: April 3, 2019. PCT patent Application no. PCT/NL2020/050226
- (2). 2019 Dutch Patent application filing, 2021 granted; Title: “Antibacterial Compounds”; Inventors: Martin, N.I.; van Groesen, E.; Tehrani, K.H.M.E.; **Wade, N.** Priority date: September 24, 2019; PCT patent Application no. PCT/NL2020/050587

Curriculum vitae

Nicola Wade was born on the 19th July 1995 in Paisley, Scotland. She started studying Chemistry with Medicinal Chemistry at the University of Glasgow in 2013. In the fourth year of her degree, she joined the group of Prof. Dr. Nathaniel Martin at Universiteit Utrecht for a 9-month internship researching *novel lipidated guanidino analogues of vancomycin*. She then returned to Glasgow for the final year of her degree where she worked on *investigating NOSYL chemistry as a means to improve 'backbone amide linking' for SPPS* in the lab of Dr. Drew Thompson. She graduated with a first-class honours degree in June 2018.

Nicola then returned to the Netherlands to pursue a biological chemistry PhD at Universiteit Leiden in the lab of Prof. Dr. Nathaniel Martin. Her research centred around developing solutions to the perpetual problem of antibiotic resistance. This allowed her to further develop skills in organic chemistry as well as in microbiology and biophysical assays. Her work on the synthesis of MRL-494 and analogues was presented as a poster at the New Antibacterial Discovery and Development Gordon Research Seminar and Conference, Barga, Italy 2022.

As of March 2023, Nicola has taken up a position of post-doctoral research associate within the group of Prof. Dr. Andrew Jamieson at the University of Glasgow.