

Stephen Cochrane MSci PhD FRSC FHEA
Reader (Associate Professor) in Medicinal Chemistry and Chemical Biology
School of Chemistry and Chemical Engineering, Queen's University Belfast
02890 974389, s.cochrane@qub.ac.uk

EDUCATION AND EMPLOYMENT HISTORY

Principal Investigator (April 2017 – present), Queen's University Belfast.

Reader (Aug 2023 – present); **Sen. Lecturer** (Aug 2020 – Jul 2023); **Lecturer** (April 2017 – Jul 2020).
Leader of a Medicinal Chemistry and Chemical Biology research group focused on antibiotic discovery.

Sir Henry Wellcome Postdoctoral Fellow (Jan 2016 – March 2017). Department of Chemistry, University of Oxford, Oxford, UK. Supervisors: Prof. Benjamin G. Davis and Prof. James H. Naismith (St. Andrews). Project: Uncovering the mode of action of lipid II flippase: A new antibiotic target.

PhD in Organic Chemistry (Sept 2010 – Dec 2015). Department of Chemistry, University of Alberta, Edmonton AB, Canada. Supervisor: Prof. John C. Vederas. Project: Structural and mechanistic studies on antimicrobial lipopeptides.

MSci in Chemistry, (Sept 2006 – June 2010). School of Chemistry, Queens University Belfast, Belfast, UK. Final year project supervisor: Dr. William P. D. Goldring. Project: Synthesis of cationic lipids for gene therapy.

INDEPENDENT RESEARCH GRANTS*

*PI = Principal Investigator, Col = Co-investigator, % = percent ownership of funds, UR = under review

13. **£3,381,421** (Col, 25%) – BBSRC sLoLa (BB/Y003187/1), Feb 2024 – Jan 2029
Cell Wall Formation in Rod Shaped Bacteria
12. **£26,704** (PI, 100%) – EPSRC Impact Acceleration Award, Jan – June 2024
Chemical Optimization of in-silico-Generated Drug Leads
11. **£1,270,245** (PI, 100%) – European Research Council Starting Grant covered by UKRI Frontier Research Guarantee (EP/Y027728/1), Oct 2023 – Sept 2028
NEW HOPE: New Approaches to Overcome the Problem of Antimicrobial Resistance
10. **£965,055** (Col, 5%) – EPSRC (EP/W021390/1), Feb 2022 – Jan 2024
A solid-state NMR instrument for Northern Ireland
9. **£243,690** (PI, 100%) – EPSRC (EP/V032860/1), Dec 2021 – Nov 2023
Interrogating the Nisin:lipid II Interaction: A Chemical Biology Approach
8. **£14,831** (PI, 100%) – EPSRC Impact Acceleration Award, Sept – Dec 2020
Immobilization of Antibiotic Targets
7. **£54,450** (PI, 100%) – EPSRC Equipment Grant, Sept 2020
Purchase of spectrofluorimeter
6. **£391,380** (PI, 100%) – EPSRC (EP/T01783X/1), Sept 2020 – Aug 2023
Synthesis of novel brevicidine and laterocidine analogues active against multi-drug-resistant Gram-negative bacteria
5. **£26,491** (PI, 100%) – QUB Interdisciplinary Fund, Jul 2019 – Jun 2020.
Solid-Supported Enzymatic Synthesis of Glycolipids (SEGS): New tools for antibiotic discovery
4. **£112,500** (Col, 10%) – Invest NI, Dec 2018 – Nov 2019
Pharmaceutical development of novel antimicrobial peptides
3. **£215,788** (PI, 100%) – EPSRC (EP/S015892/1), Jan 2019 – Dec 2020
One size fits all – The semi-synthesis of new undecaprenol analogues for the study of multiple undecaprenyl-processing enzymes
2. **£20,000** (PI, 100%) – Royal Society (RSG\R1\180063), April 2018 – March 2019

Clickaprenol, a new semi-synthetic probe to study the mechanism of several different bacterial flippases

1. **£30,136** (PI, 100%) – Wellcome Trust (110270/A/15/Z), April 2017 – Jan 2020
Uncovering the Mode of Action of Lipid II Flippase: A New Antibiotic Target
- UR. **£146,418** (PI, 100%) – Invest NI, submitted July 19th, 2024
Development of new antimicrobial peptides to kill multidrug-resistant bacteria
- UR. **£499,938** (PI, 100%) – HSCNI, submitted Nov 5th, 2024
US Ireland R&D Partnership: Antimicrobial peptides to ameliorate airway stenosis

SCHOLARSHIPS AND AWARDS

Independent Awards and Fellowships

- 2019 : N/A – Thieme Chemistry Journals Award for Early-Career Researchers
2016 : £250,000 – Sir Henry Wellcome Postdoctoral Fellowship

Graduate Awards and Scholarships

- 2015 : \$5,000 – Andrew Stewart Memorial Prize
2014 : \$60,000 – Alberta Innovates Health Solutions Graduate Scholarship
2013 : N/A – CHEM 502 Graduate Seminar Award
2011 : \$150,000 – Vanier Canada Graduate Scholarship
2011 : \$18,000 – Presidents Doctoral Prize of Distinction
2010 : \$9,000 – Provost Doctoral Entrance Award

Undergraduate Awards and Scholarships

- 2010 – Cecil Wilson Top Graduate Award
2009 – Level 3 Foundation Award
2008 – IAESTE NI Trainee of the Year
2006 – Queens University Belfast Entrance Scholarship

PEER-REVIEWED PUBLICATIONS

34. Alexander, P.J.; Oyama, L.B.; Olleik, H.; Godoy Santos, F.; O'Brien, S.; Cookson, A.; **Cochrane, S.A.**; Gilmore, B.F.; Maresca, M.; Huws, S.A.* Microbiome-derived antimicrobial peptides show therapeutic activity against the critically important priority pathogen, *Acinetobacter baumannii*. *NPJ Biofilms Microbiomes*, **2024**, under revision.
33. Buijs, N.P.; Vlaming, H.C.; Kotsogianni, I.; Arts, M.; Willemse, J.J.; Duan, Y.; Alexander, F.M.; **Cochrane, S.A.**; Schneider, T.; Martin, N.I.* A classic antibiotic reimaged: Rationally designed bacitracin variants exhibit potent activity against vancomycin-resistant pathogens. *Proc. Natl. Acad. Sci. USA* **2024**, *121*, e2315310121.
32. Machushynets, N. V.; Al Ayed, K.; Terlouw, B.; Du, C.; Buijs, N.P.; Willemse, J.; Elsayed, S.S.; Schill, J.; Trebosc, V.; Pieren, M.; Alexander, F. M.; **Cochrane, S.A.**; Liles, M.R.; Medema, M. H.; Martin, N.I.; van Wezel, G. P.* Discovery and derivatization of tridecaptin antibiotics with altered host specificity and enhanced bioactivity. *ACS Chem. Biol.* **2024**, *19*, 1106.
31. Craven, T.W.; Nolan, M.N.; Bailey, J.; Olatunji, S.; Bann, S.J.; Bowen, K.; Ostrovitsa, N.; Da Costa, T.M.; Ballantine, R.D.; Weichert, D.; Levine, P.M.; Stewart, L.J.; Bhardwaj, G.; Geoghegan, J.A.; **Cochrane, S.A.***; Scanlan, E.M.*; Caffrey, M.*; Baker, D.* Discovery and derivatization of tridecaptin antibiotics with altered host specificity and enhanced bioactivity. *ACS Chem. Biol.* **2024**, *19*, 1125.
30. Jekhmane, S.; Derks, M.G.N.; Maity, S.; Slingerland, C.J.; Tehrani, K.H.M.E.; Medeiros-Silva, J.; Charitou, V.J.; Ammerlaan, D.; Fetz, C.; Consoli, N.A.; Cochrane, R.V.K.; Matheson, E.J.; van der Weijde, Elenbaas, B.O.W.; Lavore, F.; Cox, R.; Lorent, J.H.; Baldus, M.; Kunzler, M.; Lelli, M.; **Cochrane, S.A.**; Martin, N.I.; Roos, W.H.; Breukink, E.*; Weingarh, M.* Plectasin kills bacteria by a Ca²⁺-sensitive supramolecular mechanism. *Nat. Microbiol.* **2024**, *9*, 1778.

29. Karak, M.; Cloonan, C.R.; Baker, B.R.; Cochrane, R.V.K.; **Cochrane, S.A.** Optimizations of lipid II synthesis: An essential glycolipid precursor in bacterial cell wall synthesis and a validated antibiotic target. *Beilstein Arch.* **2024**, *20*, 220.
28. Buijs, N. P.; Matheson, E. J.; **Cochrane, S. A.***; Martin, N. I.*; Targeting membrane-bound bacterial cell wall precursors; A tried and true antibiotic strategy in nature and the clinic. *Chem. Comm.* **59**, 7685 (**2023**).
27. Ballantine, R. D.; Ayed, K. A.; Bann, S. J.; Hoekstra, M.; Martin, N. I.* and **Cochrane, S. A.***; Linearization of the Brevicidine and Laterocidine Lipopeptides Yields Analogues that Retain Full Antibacterial Activity. *J. Med. Chem.* **66**, 6002 (**2023**).
26. Ballantine, R. D.; Ayed, K. A.; Bann, S. J.; Hoekstra, M.; Martin, N. I.* and **Cochrane, S. A.***; Synthesis and Structure-Activity Relationship Studies of N-Terminal Analogues of the Lipopeptide Antibiotics Brevicidine and Laterocidine. *RSC Med. Chem.* **13**, 1640 (**2022**).
25. Ayed, K. A.; Ballantine, R. D.; Hoekstra, M.; Bann, S. J.; Wesseling, C. M. J.; Bakker, A. T., Zhong, Z.; Li, Y-X., van der Stelt, M.; **Cochrane, S. A.***; Martin, N. I.* Synthetic Studies with the Brevicidine and Laterocidine Lipopeptide Antibiotics Including Analogues with Enhanced Properties and in vivo Efficacy. *Chem. Sci.* **13**, 3563 (**2022**).
24. Kotsogianni, I.; Wood, T. M.; Alexander, F. M.; **Cochrane, S. A.** and Martin N. I. Binding Studies Reveal Phospholipid Specificity and Its Role in the Calcium-Dependent Mechanism of Action of Daptomycin. *ACS Infectious Diseases* **7**, 2612 (**2021**).
23. Bann, S. J.; Ballantine, R. D and **Cochrane, S. A.** The Tridecaptins: Non-Ribosomal Peptides That Selectively Target Gram-Negative Bacteria. *RSC Med Chem* **12**, 538 (**2021**).
22. Baker, R. B.; Ives, C. M.; Bray, A.; Caffrey, M. and **Cochrane, S. A.** Undecaprenol Kinase: Function, Mechanism and Substrate Specificity of a Potential Antibiotic Target. *Eur. J. Med. Chem.* **210**, 113062 (**2021**).
21. Cochrane, R. V. K.; Alexander, F. M.; Boland, C.; Fetics, S.; Caffrey, M. and **Cochrane, S. A.** From Plant to Probe: Semi-Synthesis of Labelled Undecaprenol Analogues Allows Rapid Access to Probes for Antibiotic Targets. *Chem. Commun.* **56**, 8603 (**2020**).
20. **Cochrane, S. A.** and Lohans, C. T. Breaking Down the Cell Wall: Strategies for Antibiotic Discovery Targeting Bacterial Transpeptidases. *Eur. J. Med. Chem.* **194**, 112262 (**2020**).
19. Calabrese, C.; Uriarte, I.; Insausti, A.; Vallejo-López, M.; Basterretxea, F. J.; **Cochrane, S. A.**; Davis, B. G.; Corzana, F. and Cocinero, E. J. Observation of the Unbiased Conformers of Putative DNA-Scaffold 2 Ribosugars. *ACS Cent. Sci.* **6**, 293-303 (**2020**).
18. Chiorean, S.; Antwi, I.; Carney, D. W.; Kotsogianni, I.; Giltrap, A. M.; Alexander, F. M.; **Cochrane, S. A.**; Payne, R. J.; Martin, N. I.; Henninot, A. and Vederas, J. C. Dissecting the Binding Interactions of Teixobactin with the Bacterial Cell-Wall Precursor Lipid II. *ChemBioChem* **21**, 781-792 (**2020**).
17. Bann, S. J.; Ballantine, R. D.; McCallion, C. E.; Qian, P-Y.; Li, Y-X. and **Cochrane, S. A.** A Chemical-Intervention Strategy to Circumvent Peptide Hydrolysis by D-Stereoselective Peptidases. *J. Med. Chem.* **62**, 10466-10472 (**2019**).
16. Ballantine, R. D.; McCallion, C. E.; Nassour, E.; Tokajian, S. and **Cochrane, S. A.** Tridecaptin-Inspired Antimicrobial Peptides with Activity Against Multidrug-Resistant Gram-Negative Bacteria. *Med. Chem. Commun.* **10**, 484-487 (**2019**).
15. Ballantine, R. D.; Li, Y-X.; Qian, P-Y. and **Cochrane, S. A.** Rational Design of New Cyclic Analogues of the Antimicrobial Lipopeptide Tridecaptin A₁. *Chem. Commun.* **54**, 10634-10637 (**2018**).
14. Dong, Y. Y.; Wang, H.; Pike, A. C. W.; **Cochrane, S. A.**; Hamedzadeh, S.; Wyszynski, F. J.; Bushell, S. R.; Royer, S. F.; Widdick, D. A.; Sajid, A.; Boshoff, H. I.; Park, Y.; Lucas, R.; Liu, W-M.; Lee, S. S.; Machida, T.; Minnal, L.; Mehmood, S.; Belaya, K.; Liu, W-W.; Chu, A.; Shrestha, L.; Mukhopadhyay, S. M. M.; Strain-Damerell, R.; Chalk, N. A.; Burgess-Brown, N. A.; Bibb, M. J.; Barry 3rd, C. E.; Robinson, C. V.; Beeson, D.; Davis, B. G. and Carpenter, E. P. Structures of DPAGT1 Explain Glycosylation Disease Mechanisms and Advance TB Antibiotic Design. *Cell* **175**, 1045-1058 (**2018**).

13. Bakhtiary, A.; **Cochrane, S. A.**; Mercier, P.; McKay, R. T.; Miskolzie, M.; Sit, C. S. and Vederas, J. C. Insights into the Mechanism of Action of the Two-Peptide Lantibiotic Lacticin 3147. *J. Am. Chem. Soc.* **139**, 17803-17810 (2017).
12. **Cochrane, S. A.**; Findlay, B.; Bakhtiary, A.; Acedo, J. Z.; Rodriguez-Lopez, E. M.; Mercier, P.; and Vederas, J. C. The Antimicrobial Lipopeptide Tridecaptin A₁ Selectively Binds to Gram-Negative Lipid II. *Proc. Natl. Acad. Sci. USA* **113**, 11561-11566 (2016).
11. **Cochrane, S. A.**; and Vederas, J. C. Lipopeptides from *Bacillus* and *Paenibacillus* spp.: A Gold Mine of Antibiotic Candidates. *Med. Res. Rev.* **36**, 4-31 (2016).
10. **Cochrane, S. A.**; Li, X.; He, S.; Yu, M.; Wu, M.; and Vederas, J. C. Synthesis of Tridecaptin-Antibiotic Conjugates with in Vivo Activity Against Gram-Negative Bacteria. *J. Med. Chem.* **58**, 9779-9785 (2015).
9. **Cochrane, S. A.**; Surgenor, R. R.; Khey, K. M. W.; and Vederas, J. C. Total Synthesis and Stereochemical Assignment of the Antimicrobial Lipopeptide Cerexin A₁. *Org. Lett.* **17**, 5428-5431 (2015).
8. **Cochrane, S. A.**; Lohans, C. T.; van Belkum, M. J.; Bels, M.; and Vederas, J. C. Studies on Tridecaptin B₁, a New Tridecaptin Analogue with Activity Against Multidrug Resistant Gram-Negative Bacteria. *Org. Biomol. Chem.* **13**, 6073-6081 (2015).
7. Kwon, M.; **Cochrane, S. A.**; Vederas, J. C.; and Ro, D-K. Molecular Cloning and Characterization of Drimenol Synthase from Valerian (*Valeriana officinalis*). *FEBS Lett.* **588**, 4597-4603 (2014).
6. **Cochrane, S. A.**; and Vederas, J. C. Unacylated Tridecaptin A₁ Acts as an Effective Sensitizer of Gram-Negative Bacteria to Other Antibiotics. *Int. J. Antimicrob. Agents* **44**, 493-499 (2014).
5. **Cochrane, S. A.**; Findlay, B.; Vederas, J. C.; and Ratemi, E. S. Key Residues in Octyl-tridecaptin A₁ Analogs Linked to Stable Secondary Structure in the Membrane. *ChemBioChem* **15**, 1295-1299 (2014).
4. **Cochrane, S. A.**; Lohans, C. T.; Brandelli, J. R.; Mulvey, G.; Armstrong, G. D.; and Vederas, J. C. Synthesis and Structure-Activity Relationship Studies of N-Terminal Analogues of the Antimicrobial Peptide Tridecaptin A₁. *J. Med. Chem.* **57**, 1127-1131 (2014).
3. Lohans, C. T.; van Belkum, M. J.; **Cochrane, S. A.**; Huang, Z.; Sit, C. S.; McMullen, L. M.; and Vederas, J. C. Biochemical, Structural and Genetic Characterization of Tridecaptin A₁, an Antagonist of *Campylobacter jejuni*. *ChemBioChem* **15**, 243-249 (2014).
2. **Cochrane, S. A.**; Huang, Z.; and Vederas, J. C. Investigation of the Ring-Closing Metathesis of Peptides in Water. *Org. Biomol. Chem.* **11**, 630-639 (2013).
1. Liu, W.; Chan, A. S. H.; Liu, H.; **Cochrane, S. A.**; and Vederas J. C. Solid Supported Chemical Synthesis of Both Components of the Lantibiotic Lacticin 3147. *J. Am. Chem. Soc.* **133**, 14216-14219 (2011).

PATENTS

1. United Kingdom Priority Patent Application No. 2101165.5; Title: Antibiotic Natural Product Analogues Inventors: Ballantine, R. D.; **Cochrane, S. A.**; Al Ayed, K. and Martin, N.I. Priority date: January 28, 2021.

CONFERENCE PRESENTATIONS AND VISITING SPEAKER INVITATIONS

29. **Cochrane, S. A.** (July 10th, 2024) Speaker at EuChemS, Dublin, IRL.
28. **Cochrane, S. A.** (June 27th, 2024) Invited Speaker, Utrecht University, NL
27. **Cochrane, S. A.** (Mar 14th, 2024) Invited Speaker, Ineos Oxford Institute Early- and Mid-Career Researcher Conference, University of Oxford, UK.
26. **Cochrane, S. A.** (Feb 28th, 2024) Invited Speaker, University of Glasgow, UK.
25. **Cochrane, S. A.** (Oct 31st, 2023) Invited Speaker, Leiden University, Netherlands.
24. **Cochrane, S. A.** (Sept 12th, 2023) Delivered Early Career Workshop at RSC Chemical Biology Community Meeting, University of Leeds, UK.

23. **Cochrane, S. A.** (Sept 11th, 2023) Speaker RSC Chemical Biology Community Meeting, University of Leeds, UK.
22. **Cochrane, S. A.** (June 9th, 2023) Plenary Speaker at Pathogen Biology Ireland Symposium, Galway, Ireland.
21. **Cochrane, S. A.** (May 21st, 2023) Speaker at 56th ESBOC Chemical Biology in Europe Symposium, Gregynog Hall, Wales, UK.
20. Organized 2023 RSC Chemical Biology and Bioorganic Group Forum, Belfast, UK.
19. **Cochrane, S. A.** (Aug 28th – Sept 2nd, 2022) Speaker at European Peptide Symposium, Barcelona, Spain.
18. **Cochrane, S. A.** (Aug 8th – 9th, 2022) Invited Speaker for Chemical Biology Ireland, Dublin.
17. **Cochrane, S. A.** (Jan 28th, 2022) Visiting Speaker at Wayne State University (virtual).
16. **Cochrane, S. A.** (Nov 16th, 2020) 3rd SCI/RSC Symposium on Antimicrobial Drug Discovery in London, UK. *Cancelled due to Covid-19.*
15. **Cochrane, S. A.** (Aug 17th – 18th, 2020) Irish Chemical Biology Symposium in Dublin, Ireland. *Cancelled due to Covid-19.*
14. **Cochrane, S. A.** (Jun 7-12th, 2020) Virtual FASEB Microbial Glycobiology Conference.
13. **Cochrane, S. A.** (Jan 30th, 2020) Visiting Speaker at Trinity College Dublin, Ireland.
12. **Cochrane, S. A.** (Nov 29th, 2019) Visiting Speaker at Maynooth University, Ireland.
11. **Cochrane, S. A.** (Sept 6th, 2019) Speaker at the Chemical Biology and Bio-organic Chemistry Group Meeting in Fimbush, UK.
10. **Cochrane, S. A.** (Aug 28th, 2019) Speaker at the International Meeting on Antimicrobial Peptides in Utrecht, Netherlands.
9. **Cochrane, S. A.** (Mar 25th, 2019) Speaker at the 10th RSC Chemical Biology and Bio-organic Chemistry Group Forum in Manchester, UK.
8. **Cochrane, S. A.** (2018) Speaker at Chemistry as Innovating Science (CHAINS) 2018 in Leiden, Netherlands.
7. **Cochrane, S. A.** (2018) Speaker at the 101st Canadian Chemistry Conference and Exhibition in Edmonton, Alberta, Canada.
6. **Cochrane, S. A.**; and Davis, B. G. (2017) Poster presentation at the 25th American Peptide Symposium in Whistler, BC, Canada.
5. **Cochrane, S. A.**; Findlay, B.; Bakhtiary, A.; Acedo, J. Z.; Rodriguez-Lopez, E. M.; and Vederas, J. C. (2016) Poster presentation at the 34th European Peptide Symposium in Leipzig, Germany.
4. **Cochrane, S. A.**; and Vederas, J. C. (2015) Poster presentation at the 24th American Peptide Symposium in Orlando, FL, USA.
3. **Cochrane, S. A.**; and Vederas, J. C. (2014) Speaker at the 33rd European Peptide Symposium in Sofia, Bulgaria.
2. **Cochrane, S. A.**; and Vederas, J. C. (2013) Speaker at the 2013 Volcano Conference in Chemical Biology in Pack Forest, WA, USA.
1. **Cochrane, S. A.**; Huang, Z.; and Vederas, J. C. (2012) Poster presented at the 95th Canadian Chemistry Conference and Exhibition in Calgary, Alberta, Canada.

TEACHING EXPERIENCE

Queen's University Belfast (April 2017 – present)

7. CHM4007, Frontiers in Drug Discovery. Course coordinator, lectured on antibiotics and antibody-drug conjugates
6. CHM3016, Drug Development. Lectured on macrocyclic peptide drugs and chem biology
5. CHM3015, Advanced Practical Work in Medicinal Chemistry. Project coordinator for 8 week Med Chem mini project
4. CHM3002, Organic Chemistry III. Lectured on peptide synthesis
3. CHM1004, Structure, Reactivity and Mechanism in Organic and Bioorganic Chemistry. Lectured on primary metabolites
2. CHM2003, Organic Chemistry II tutorials

1. CHM1101, Organic Chemistry I tutorials

University of Oxford (Feb 2016 – March 2017)

1. Organic Chemistry Tutor for Year 2 and 3 students at Pembroke College

University of Alberta (Sept 2010 – Dec 2015)

1. Organic Chemistry lab instructor and help-session instructor

PRESS AND MEDIA CONTRIBUTIONS

10. *“Peer reviewers: chill out and don’t let the power go to your head.”* Invited opinion piece by [Times Higher Education](#) (July 4th, 2024).
9. *“Chemistry Olympics: A marathon in PPE and optimized jumping blades.”* Outreach activity reported by [C&EN News](#) (June 29th, 2024).
8. *“I ran a marathon in full PPE.”* Wrote Last Retort for [Chemistry World](#) (May 16th, 2024).
7. *“Queen’s University scientist breaks new world record at London Marathon.”* Outreach activity reported by [ITV News](#), [Belfast Telegraph](#) and [Belfast Live](#). (April 22nd, 2024).
6. *“Pre-organising antibiotic structure could aid fight against resistance.”* Expert opinion for [Chemistry World](#) (Feb 20th, 2024).
5. *“Researchers to benefit from £18M investment in world-class frontier bioscience.”* Funding success reported by [my Science](#), [Science Business](#) and [AAAS EurekAlert!](#) (Sept 29th, 2023).
4. *“A Conversation with Stephen Cochrane.”* Research interview for [C&EN News](#) and [ACS Central Science](#) (10th July, 2023).
3. *“Irish research bags €1.5m to end antibiotic resistance.”* Funding success reported by [Silicon Republic](#) (March 2nd, 2023).
2. *“Queen’s University researcher secures £1 million to target antibiotic resistance.”* Funding success reported by [Belfast Telegraph](#) and [ITV News](#) (March 2nd, 2023).
1. *“Hydroxychloroquine cannot be made at home using fruit peel.”* Expert opinion for [Reuters Fact Check](#) (June 4th, 2021).