

Rebecca Jane Miriam Goss

<http://rjmg.wp.st-andrews.ac.uk/rebecca-goss/>

Date of Birth: 2nd February 1976. Nationality: British

School of Chemistry, Biomedical Sciences Research Complex, University of St Andrews, Fife, KY169ST

Tel: 01334 463 856 (07740 47 47 28) E-mail: rjmg@st-andrews.ac.uk



The Goss Group are active in the area of elucidating and engineering biosynthesis of **natural products, at the chemical and genetic level, and in blending synthetic biology and synthetic chemistry to make new to nature natural products**. Specifically, our research focuses on natural products with important medicinal properties, particularly anti-infectives, and in understanding how biosynthetically intriguing motifs within these compounds are assembled. From this vantage point we harness individual enzymes as convenient tools for organic synthesis, and engineer a combination of synthetic chemistry and synthetic biology to harness entire biosynthetic pathways in order to enable expeditious access to libraries of medicinally relevant compounds. These libraries may be used to gain a greater understanding as to how the drug acts at the molecular level within the cell.

The Goss group also have active programmes in the complementary areas of natural product and biocatalyst discovery and development. In team with scientists in Chemical Engineering the Goss group have pioneered an Engineered *E. coli* plug and play platform for biocatalysis.

Goss has established a **national and international reputation** presenting ~120 invited, plenary and keynote lectures including: ASTAR Singapore 2018, MSD Boston 2018, GRC Natural Products 2018 Yale 2013, Gordon Research Conference Biocatalysis 2014, RSC Synthesis 2015, Biotrans 2015, GRC Natural Products 2012, ETH Zurich 2012, ICIQ Tarragona Spain 2012, Brazil CIFARP 2013, Japan Chemical Biology 2012

AWARDS AND HONOURS

2003 Royal Society Dorothy Hodgkin Fellowship (~10 awarded each year across the UK in science)

2007 awarded the 2006 RSC Meldola Medal (awarded to the most promising UK chemist under the age of 32) in particular I was “distinguished for excellent contributions at the interface of organic chemistry and molecular biology”

2011 Thieme Chemistry Journal Award

2011 JSP award to participate at the Burgenstock Stereochemistry meeting

2011 Selected as the UK’s under 40 Organic Chemistry delegate for EuChem’s Young Investigators Workshop

2013 Natural Product Report Emerging Researcher Lectureship

Awarded for our pioneering new approach to natural product analogue generation “Genochemetics”, which marries together Synthetic Biology and Synthetic Chemistry to access new bioactives of medicinal interest.

Awarded in subsequent years to scientists at Yale, Harvard and Scripps

2014 ERC consolidator award

Employment Record

Professorship in Biomolecular/Organic Chemistry, University of St Andrews

St Andrews first female professor of Organic Chemistry

2018-

Readership (Associate Professorship) in Biomolecular/Organic Chemistry, University of St Andrews

September 2012 – 2018

Readership in Organic Chemistry, University of East Anglia

January 2012 – September 2012

Senior Lectureship, School of Chemistry, University of East Anglia

December 2010 – January 2012

Lectureship, School of Chemistry, University of East Anglia

July 2005-2010 ([Maternity break 2008](#))

Lectureship, School of Biological and Chemical Sciences, University of Exeter

October 2003-June 2005 (Closure of Chemistry in Exeter)

Royal Society BP Dorothy Hodgkin Fellowship

“Combinatorial and Directed Biosynthesis to Create Novel Halogenated “Natural” Products”

October 2003-2007

One Year Teaching Fellowship, School of Chemistry, University of Nottingham

October 2002-September 2003

Post Doctoral Research Associate, Department of Biochemistry, University of Cambridge, Professors J. Staunton (FRS) and P. F. Leadlay (FRS)

November 2000-September 2002

Education

PhD, University of Durham, Professor D. O’Hagan

October 1997-October 2000 (Awarded June 2001)

Various studies including investigations into the stereochemical course of the fluorination event in the biosynthesis of fluoroacetate. Involved a short period at Paris XI.

Degree Chemistry BSc Hons., Hatfield College, University of Durham

First year joint Biology and Chemistry (Awarded June 1997)

External Profile

Research Lectures

1. Invited Speaker, Joint Genome Institute, Oakland, California, 2020
2. Invited Speaker San Diego, SIMS, 2020,
3. Invited Speaker Japan Chemical Society, 2019
4. Invited Speaker, Tokyo University, 2019
5. Invited Speaker, Kitasato Institute, Tokyo, 2019
6. Invited Speaker, Canada Chemical Conference,
7. Invited Speaker Fusion, Synthetic Biology of Natural Products,
8. Invited Speaker CBC Novo Nordisk Natural Products
9. Invited speaker Sussex
10. Invited speaker Copenhagen
11. Invited speaker Canada
12. Invited speaker Mexico
13. Invited Speaker, GSK, September 2018
14. Invited Speaker, ASP, USA, July 2018
15. Invited Speaker **MSD, USA**, July 2018
16. Invited Speaker, GRC Natural Products, **New Hampshire, USA**, July 2018
17. Invited Speaker, Warwick, June 2018
18. Plenary Speaker, European Symposium on BioOrganic Chemistry, **Gregynog** May, 2018

19. Plenary Speaker, European Symposium on BioOrganic Chemistry, **Gregynog** May, 2018
20. Invited Speaker, **University of York** 2018
21. Invited Speaker, Biosystems Design 4.0, **Singapore**, May 2018
22. Invited Speaker, **Wuhan, China**, April, 2018
23. Invited Speaker, Natural Product Discovery and Development, **Florida**, USA, January 2017
24. Plenary Lecturer, Mona Congress, **Jamaica**, January 2018
25. Invited Speaker, University of **Basel**, December 2017
26. Invited Speaker, NPRONET, **Manchester**, October 2017
27. Invited Speaker, Dial a Molecule, **Liverpool**, May 2017
28. Invited Speaker, Halogenation, **Glasgow**, June 2017
29. Invited Speaker, ISBA, **Korea**, May 2017
30. Invited Speaker, **Tubingen** Natural Products Meeting May 2017
31. Seminar Speaker, **Servier**, France, May 2017
32. Seminar Speaker, **Edinburgh**, March, 2017
33. Invited Speaker, Synthetic Biology of Natural Products, **Mexico**, March 2017
34. Seminar Speaker, **Muenster**, March, 2017
35. Plenary lecture **Norwegian** Chemical Society annual meeting January 2017
36. Invited Speaker, Polyomics, **Glasgow**, February, 2017
37. Invited Speaker, **Scottish Metabolomics** Network, November 2016
38. Invited Speaker, **Turkey** BNP, September 2016
39. Invited Speaker, EUCHEM, **Seville**, September 2016
40. Keynote Speaker invitation **Canberra** declined due to teaching commitments
41. Invited Speaker, Cambridge postgraduate symposium March 2016- declined due to teaching commitments
42. IBIOIC speaker January 2016
43. Invited Speaker Oxford postgraduate symposium November 2015- declined due to teaching commitments
44. Keynote Speaker, 3rd India/UK Med Chem Congress, **Hyderabad**, November 2015–Declined invitation
45. Invited Speaker, **Leipzig**, December 2015
46. Invited Speaker, **Bonn** declined due to teaching commitments
47. Invited Speaker, **NPronet, Manchester**, September 2015 Declined
48. Invited Speaker, **Oxford** Chemistry, Pfizer Symposium, October 2015 Declined
49. Invited Speaker, NOST, **India**, October 2015 Declined
50. Invited Speaker, RSC Oxford/Cambridge Synthesis meeting **Cambridge** July 2015
51. Keynote Speaker, Biotrans, **Vienna**, July 2015
52. Keynote Speaker, Dial a Molecule, **Warwick**, June 2015
53. Invited Speaker, Max Plank, Chemical Ecology, **Jena**, January 2015
54. Invited Speaker, **Newcastle**, January 2015
55. Invited Speaker, Dublin Symposium, **Dublin** December 2014
56. Invited Speaker, Chemical Ecology, **Jena** December 2014
57. Invited speaker, Natural Products **Capetown**, September 2014
58. Invited Seminar Speaker, UCT **Capetown**, September 2014
59. Invited Speaker, ERAIB, **Dresden**, September 2014
60. Invited Speaker, Bluegenics, **Rekjavic**, September 2014
61. Invited speaker, GRC Biocatalysis, Bryant University, **Smithfield USA** July 2014
62. Invited speaker, International ELRIG, **Telford**, March 2014
63. Speaker, Perkin Meeting, Heriot Watt, **Edinburgh**, December 2013
64. Keynote speaker, and RSC NPR award lecture, CIFARP, Ribiero de Preto, **Brazil**, November 2013
65. Invited speaker, (declined) International Symposium on antibacterial research of the DFG, **Bonn**, November 2013

66. Invited speaker, Biofilm Workshop, **Dublin**, November 2013
67. Speaker, VAAM Workshop, Biology of Bacteria Producing Natural Products, **Frankfurt**, September 2013
68. Invited speaker, **Yale**, September 2013
69. Plenary speaker invitation (~~declined~~) Heterocyclic and Astex, **Cambridge**, September 2013
70. Invited speaker, Transatlantic Frontiers of Organic Chemistry, Kloster, Seon, **Germany**, August 2013
71. Invited speaker, Joint JCS and RSC Symposium on Chemical Biology, **Kyoto**, Japan, March, 2013
72. Invited speaker, SGM Annual meeting, **Manchester**, March 2013 – (requested representation by senior PDRA)
73. Invited speaker, **GSK Stevenage**, November, 2012
74. Invited speaker, New Frontiers in Natural Product Chemistry, **Nottingham**, September, 2012
75. Invited speaker, CHINA, September, 2012 (withdrawn, due to moving to St Andrews)
76. Invited speaker, Bacterial natural products workshop Novartis, **Basel**, September 2012 – (requested representation by senior PDRA)
77. Keynote speaker, the 2012 International Congress on Natural Products Research, **New York**, August, 2012
78. Invited speaker, Gordon Research Conference on Natural Products, **New Hampshire**, July, 2012
79. Invited speaker, **ETH Zurich**, July, 2012
80. Invited speaker, **Institute of Chemical Research of Catalonia, ICIQ**, June, 2012
81. Keynote speaker, Synthetic Biology to Dial-a-Molecule, **GSK, Stevenage**, May, 2012
82. Keynote speaker, European Symposium on BioOrganic Chemistry, **Gregynog** May, 2012
83. Invited speaker, **Dresden**, May 2012
84. Invited speaker, David O'Hagan's Fluorine award symposium, ACS, **San Diego**, March, 2012
- 85.** Invited speaker, **Minnesota Centre for Drug Design**, March 2012
- 86.** Invited speaker, **Nebraska Medical Centre**, March 2012
87. Invited speaker, **Michigan**, March 2012
88. Invited speaker, **Leeds**, February 2012
89. Speaker, Zing Natural Products, Lanzarote, February 2012
90. Invited speaker, **Gröningen**, January 2012
91. Invited speaker, **St Andrews**, Scotland, November, 2011
92. Invited lecture, Institute for Technical Biochemistry, **Stuttgart**, October, 2011
93. Invited speaker, **Munster**, October 2011
94. Speaker, Gregynog Young Organic Chemists meeting, **Gregynog**, October 2011
95. Speaker, ESF/EMBO Synthetic Biology, **St Felieu**, Spain, October 2011
96. Invited speaker, **Syngenta**, Jealotts Hill, UK, September 2011
97. Invited speaker, Texas South Western, **Dallas**, September 2011
98. Invited speaker, ACS Fall Meeting, BIOL: **Pfizer symposium**, **Denver**, August 2011
99. Invited speaker, Synthetic Biology Symposium, Imperial, **London** July 2011
100. Selected as UK <40year old Organic Chemistry representative, EUCHEMS, **Crete**, July 2011
101. Invited speaker, Department of Chemistry, University of **Geneva**, July 2011
102. Short Talk, NADD 2011, **Naples**, June 2011
103. Invited Lecture, **Novartis, Basel**, May 2011
104. Short talk **Bürgenstock**, May 2011
105. Invited speaker, Department of Chemistry, University of **Cardiff**, April 2011
106. Invited speaker, Annual Meeting of the Chemical Society of **Japan**, Chemical Biology Symposium, March 2011, *cancelled*
107. Invited speaker, RSC Heterocyclic Symposium, Imperial, **London**, January 2011
108. Invited speaker, Department of Chemistry, **EPFL**, December 2010
109. ESF, Industrial Microbiology, Bielefeld, **Germany**, November 2010

110. Invited speaker, Department of Chemistry, University College **London**, October 2010
111. Selected speaker, Natural Products, **Italy**, September 2010
112. Nominated for ACS Fall Meeting-Pre tenure Organic symposium, **Boston**, August 2010
(16/64 nominees invited)
113. Invited speaker, Department of Chemistry, University of **Warwick**, June 2010
114. Invited speaker, Department of Chemistry, University of **Bristol**, June 2010
115. Invited speaker, Department of Biological and Chemical Sciences Seminar, **QMUL**, March 2010
116. Invited speaker, International Natural products Meeting, **Brazil**, November 2009
117. Invited speaker, Young Organic Chemists Symposium, Imperial, **London**, April 2009
118. Invited speaker, Zing Natural Products, **Antigua**, March 2009
119. Invited speaker, York Mini Symposium on Natural Products, **York**, December 2008
120. Invited speaker/consultant, GSK Young Academics Symposium, **GSK, Stevenage**, October 2008
121. Invited speaker, Department of Chemistry, **Oxford**, June 2008
122. Selected speaker, Natural Products **Italy**, May 2008
123. **Bürgenstock**, International Stereochemical Meeting, April 2008 (poster)
124. Invited speaker, Zing Natural Products **Antigua**, February 2008
125. Keynote speaker, RSC Natural Product Symposium, University of Nottingham, **Nottingham**, October 2007
126. Invited speaker, Department of Chemistry, **Edinburgh**, May 2007
127. Young Organic Chemists Workshop, **Gregynog**, October 2007
128. RSC, Biosynthesis, **Firbush**, September, 2007
129. RSC "Directing Biosynthesis" International Meeting, Robinson College, **Cambridge**, September 2006
130. Plenary Lecture, Society of General Microbiology, National Meeting **Dublin**, August 2006
131. IUPAC "Biodiversity and Natural Products" International Meeting, **Kyoto**, August 2006
132. Invited speaker, Department of Chemistry University of **Cape town**, February 2006
133. Invited speaker, Department of Chemical Engineering, **Bath**, November 2005
134. Invited speaker, Microbes in **Norwich** National Meeting, 2005
135. Invited speaker, Department of Chemistry **Liverpool**, 2005
136. RSC, Nucleic Acids **Firbush**, 2005
137. Invited speaker, SouthWest Regional Organic Meeting **Bristol**, 2005
138. IUPAC "Biodiversity and Natural Products" International Meeting, **New Delhi**, February 2004
139. Invited speaker, Department of Chemistry University of **Leeds**, 2004
140. Invited speaker, Department of Molecular Biology, University of **Gothenburg, Sweden**, 2004

External Examiner

8 Masters theses (University of Bristol 3, University of Durham 1, Southampton University 1, University of Cambridge 1, University of Sussex 1, UCD 1, Birmingham 1, Aberdeen 1)
13 PhD thesis (University of Warwick, University of Manchester, Cardiff University, University of Bristol x 3, University of Queensland, University of Cambridge x 4, University College Dublin, UCL x 2, University of Birmingham)

Royal Society Involvement

My sponsorship by the Royal Society provided me with the opportunity to become involved with a variety of schemes and initiatives. The Royal Society have set up a funding programme to facilitate collaboration between UK and Tanzanian scientists. With a small team of other UK scientists I joined the Vice President of the Royal Society and the RS international grant officers in a fact finding visit to Tanzania in order to help the Royal Society to set up a custom made funding programme. This visit was also very useful on a personal level as it provided me with links to Tanzanian Natural Product Chemists who isolate active components from traditional medicines. I have subsequently organised an run a workshop for UK and Tanzanian scientists with a research focus on bioactives from nature to present and discuss their research.

Royal Society of Chemistry Involvement

CBF now CBiF: I have served on the executive committee of the **RSC Chemical Biology Forum (CBF)** now renamed as the Chemistry Biology interface Forum CBiF. CBiF seeks to advise government on policy, influence funding bodies, and has recently commissioned a report to assess the state of science at the interface between Chemistry and Biology in the UK.

Having had a break from being an invited member of CBiF, I have now returned as an elected member **Organic Division (Formerly Perkin)**. I have just completed a term of service for the RSC Organic Division Executive. I have assisted in initiating a new annual South and East (London, Cambridge, East Anglia- and Pharma and Biotech in this region) Organic Symposium. *I am also leading the organisation for a large three stranded International Natural Product Meeting for 2013.*

BOG: I have recently completed a period of 6 years' service as secretary to the RSC Bioorganic Chemistry group. The Bioorganic group have a large and developing portfolio of postgraduate, national and international conferences that seek to meet the needs of the interests group's members. Additional activities with BOG have included my involvement on the organising committee for an international meeting on "Directing Biosynthesis" (Cambridge 2006), the RSC annual Bioorganic Postgraduate meeting (Bath 2008), Chemistry of the Cell 3 (UCL 2008), and organising part of the IUPAC meeting (Glasgow 2009). I have also organised UK lecture tours for Professor John Vederas, University of Alberta (2008), Professor Sarah O'Connor, MIT (2007), and Professor Tobias Ritter, Harvard (2010)

Consultancy

I have acted as consultant for:

Servier (Paris)

GSK (Stevenage)

Merck (New Hampshire)

Novartis (Basel)

Editorial Boards and Peer Review of Various Papers and Grant Applications Including:-

Associate Editor Chem Soc Rev

Member of the Advisory Editorial Board for RSC Chemical Communications

Member of the Advisory Editorial Board for RSC Natural Product Reports

Member of the Royal Society, Newton Grant Committee

Elected Member of the RSC Chemistry Biology Interface Division

Journal articles: Nature Reviews, Biochemistry, Metabolic Engineering, Organic and Biomolecular Chemistry, Chemical Communications, ChemBioChem and Chemical Science.

Grant applications: Royal Society, BBSRC, EPSRC, Leverhulme, National Research Foundation South Africa, International Foundation for Science-Portugal (IFS), Chem-Them Netherlands (NWO) and The Marsden Fund,

Society Membership

Royal Society of Chemistry

American Chemical Society

Biochemical Society

Society for General Microbiology

Higher Education Academy

Funding Awarded >£6M to date

2018	Royal Society Wolfson SMART centre (St Andrews Multidisciplinary Anti-infective Research and Therapeutics Centre)	£165700	PI
2018-2022	IBIOIC studentship	£90K	PI
2018-2022	EastBio studentship	£90K	PI
2018	ISSF	£16K	PI
2018	IAA with Gayle Doherty, and Cristina Pubill	£18K	PI
2017-2019	IBIOIC Synthetic Biology Award with Ingenza and Lucite	£200K	PI
2017-2018	Syngenta	£10K	PI
2015-2017	Marie Curie IIF	€183,455	PI
2015-2016	IBioIC with Ingenza	£96K	PI
2015-2019	H2020 EMBRIC (Marine Research) Linking across Europe to develop best practice in the discovery of bioactives from the marine environment	€376,262 / €9,041,611	CoI
2014-2019	ERC consolidator	€2M	PI
2014-2017	FP7 ERA IB: Biochemistry and applications of halogenases to antibiotic and agrochemical development	£442.5K	CoI
2013-2017	GSK Case Award	~£90K	PI
2012-2016	EU Integrating Marine Biotechnology Bluegenics Leading WP6 on development of marine bioactives And analogue generation	~ €375K / Euro6M	CoI
2013-2014	Impact Acceleration Award	£21K	PI
2012-2015	Syngenta Case Award	~£90K	PI
2012	Biochemical Society studentship	~1.6K	PI
2011-2014	BBSRC (ranked 4thst/~120 at panel)	£350K	PI
2011-2013	Marie Curie IIF	Euro 210K	PI
2011-2014	BBSRC (ranked 1st/~100 at panel)	£387K	PI
2010-2014	MRC CASE award/Aquapharm	£90.06K	PI
2010	Nuffield Summer Studentship	£1.4K	PI
2010-2011	BigC	£50.893	CoI
2009-2011	Leverhulme F/00204/AO	£111.5K	PI
2009-2012	MRC Millstein in collaboration with Dr Matt Hutchins (UEA)	£394.32K	CoI
2009-2015	INTERREG UEA, Southampton, Caen, Rouen	£1183.174K	CoI
2008	Royal Society Tanzania Network Grant	£10K	PI
2008	Nuffield Summer Studentship	£1.4K	PI
2007-2010	BBSRC BB/E008984/1	£259.424K	PI
2007-2010	EPSRC EP/E000894/1	£55.948K	PI
2007-2009	Leverhulme F/00204/AF	£93.898K	PI
2003-2007	Royal Society Dorothy Hodgkin Fellowship	£145.240K	PI
2003-2007	EPSRC/Biotica CASE	£70K	PI
2006 SGM	Summer Studentship	£1.68K	PI
2005	Nuffield Summer Studentship	£1.3K	PI
2004	Pfizer Summer Studentship	£1.8K	PI
2004	SGM Summer Studentship	£1.68K	PI

Current Research Group

Postdoctoral Research Associates

Dr Sunil Sharma

Dr Cristina Pubil

Dr Yunpeng Zhang
 Jinlian Zhao
 Jack Connoley
 Jo Saddler
 Danai Gkotsi

PhD. Students

Mr Chris Bailey	Undergraduate Manchester
Miss Emily Abraham	Undergraduate Bristol
Mr Jag Dhaliwal	Undergraduate Leicester
Mr Alan Obled	Undergraduate Lyon
Mr Chris Cartmel	Undergraduate Bangor

Graduated PhD Students

Dr Simon Lanceron	2010	Undergraduate: Marseille, France, Employed at Eli Lilly
Dr Emma Rackham	2011	Undergraduate: Aston, Birmingham, Employed within by Chirotech, Cambridge
Dr Phillip Newill	2011	Undergraduate: Bangor, UK
Dr Funsho Obasanjo	2012	Undergraduate: UCL, UK, Employed in Nigerian government research institute
Dr Mike Winn	2012	Undergraduate: UEA, Employed as PDRA in Dublin
Dr Amany Ragab	2012	Undergraduate: Tanta Egypt, subsequently employed as research group leader and lecturer in Tanta
Dr Dan Tromans	2013	Undergraduate: Swansea, UK employed as a tutor then as a lecturer and programme leader for Science and Engineering at Kaplan International College
Dr Antoine Abou Fayad	2014	Undergraduate: Beirut, Lebanon, Employed as PDRA for Prof Rolf Muller, Saarland, now PI at American University of Beirut
Dr Joseph Zarins Tutt	2015	Undergraduate: UEA, Employed by Lonza
Dr Emma Bogosyan	2015	Undergraduate UEA, UK, Employed by European Lead factory
Mr Kevin Mahoney	2015	Undergraduate: Belfast, Employed in process chemistry
Dr Duncan Smith	2016	Undergraduate: UEA, Employed at the University of Manchester
Dr Enrico Marelli	2017	Employed as PDRA in Italy
Dr Danai Gkotsi	2017	Undergraduate: Aberdeen Employed as PDRA Goss group
Dr Frida Michailidou	2017	Undergraduate: Thessaloniki, Greece, then Lyon Employed in

Previous Postdoctoral Workers

Dr Sabine Grüschow,	past PDRA experience: Prof. David Sherman, Minnesota/Michigan, USA Ph.D. supervisor: Prof. Dudley Williams, Cambridge, UK
Dr Tania Barberi	Ph.D. University of Bologna
Dr Amany Ragab	Ph.D. supervisor: Dr Rebecca Goss, UEA, UK Undergraduate: Tanta, Egypt
Dr Hong Gao	Employed as a PDRA in Edinburgh
Dr Moualan Gan	Employed as Assistant Prof. in Beijing
Dr Matthias Agbo	Employed as Associate Prof. in Kenya
Dr Michael Corr	Employed as PDRA in Cancer Research Group, Newcastle
Dr Andreas Tsiglikas (Joint project with Dr Mark Simmons, Birmingham Chemical Engineering)	Employed at Johnson Matthey Catalysts
Dr Refaat Hamed	Employed as a lecturer at Bradford University
Dr Abhijeet DebRoy	Employed as a senior scientist at Evotec, Thane (near Mumbai)
Dr Joanne Foulkes	Employed as a lecturer at Liverpool John Moore's

Coordinator for Biocatalysis Taught Component for Criticat Doctoral Training Centre (University of St Andrews)

Coordinating St Andrews Teaching Contribution in Biocatalysis to The IbioIC industrial Biotechnology training programe

I am strongly involved in service to the Scientific Community have significant additional administrative experience from my involvement in various RSC committees including the **RSC Chemical Biology Interface Forum** (to which I was elected), as **Secretary to the BioOrganic Group** (to which I was invited) and as an **Executive Member of RSC Organic Division** (to which I was invited).

Current Teaching

1st year BioOrganic Chemistry: 10 lectures, exam marking for a large cohort, tutorials and workshops

2nd year Organic Chemistry: 15 lectures,

4th/5th year Chemistry + Society, 16 lectures, exam marking

MSc Biochemistry, “preparing grant applications”, 2 lectures

PhD/MSc introduction to biocatalysis, PKSs, NRPSs 3 lectures

3rd year integrating Chemistry 10 marked tutorials

3rd year mini-project laboratories (4 weeks of morning labs)

3rd year organic laboratories (4 weeks of afternoon labs + vivas and marking)

4th year co-supervision of a company based research project student, 4 days contact + travel for 3 visits.

4th/5th year, year-long research projects – currently supervising 4xBSc +1xMSc (viva voce assessment of 20)

Schools Outreach

I am passionate about inspiring the next generation of potential scientists. To this end I have been involved in a number of activities including:-

Schools Demonstration Lecture Tour: I arranged and delivered a series of eight demonstration lectures to secondary school children in the Isle of Man. The lectures combined concepts in Physics, Chemistry and Biology and were designed to convey how important science is to life at every level. Schools on the Isle of Man have little interaction with universities. Having enjoyed financial support from the Manx government through my degree and PhD, I am keen to repay this support through continued interaction with secondary schools on the Island.

Currently involved in applications for:

-Outreach activity in antibiotic discovery

-Poetry + Science “Not-men-clature” – to use combinations of poetry and science demonstration to inspire more young girls to realise that they too could have a career in science

Publications

* Denotes corresponding author

A number of projects within my research group, as well as through collaboration, are now reaching maturity and numerous manuscripts are currently in preparation, several for leading multidisciplinary science journals. I list here only the submitted, accepted and published manuscripts:-

1. A Wildly Different Halogenase: Discovery and Biocatalytic Utility
DS Gkotsi and Rebecca J. M. Goss* *Nature Chemistry*, *accepted*
2. A natural solution to the photoprotection and isolation of the potent polyene antibiotic marinomycin.
Christopher S. Bailey,^[a] Joseph S. Zarins-Tutt,^[a] Matthias Agbo,^[a] Hong Gao,^[a] Alberto Diego Taboada,^[b] Maoluo Gan,^[a] Emily R. Abraham,^[a] Grahame Mackenzie,^[b] * P. Andrew Evans^[c] * and Rebecca J. M. Goss^[a]
Chem Sci, **2019**, DOI 10.1039/C9SC01375J *Chem Sci Pick of the week*, *Highlighted in C&EN News*, <https://cen.acs.org/pharmaceuticals/Pollen-shells-protect-drugs-UV/97/i22> For interview with Alan @kasujja #BBCNewsday @BBCworldservice click chirb.it/I5GKna For Times Review : <https://www.thetimes.co.uk/article/antibiotic-found-in-ocean-could-help-beat-superbugs-cx238tmr7>
3. Phenylalanine meta-hydroxylase: a single residue mediates mechanistic control of aromatic amino acid hydroxylation.
S. Gruschow, J. Sadler, P. Sharrat, R. J. M. Goss, *ChemBioChem*. **2019** doi: 10.1002/cbic.201900320.
4. Buchwald Hartwig diversification of unprotected halotryptophans, halotryptophan containing tripeptides and the natural product baretin in aqueous conditions
Yohann J. G. Renault,^{a†} Rosemary Lynch,^{a†} Enrico Marelli,^{a†} Sunil. V. Sharma,^a Cristina Pubill-Ulldemolins,^{a, b} Joshua A. Sharp,^a Chris Cartmell,^a Paco Cárdenas,^c Rebecca J. M. Goss^{a*}
Chem. Comm. **2019**, in press
5. Heck diversification of indole based substrates under aqueous conditions: from indoles to unprotected halo-tryptophans and halo-tryptophans in a natural and a new to nature natural product. Cristina Pubill-Ulldemolins,^[a,b] † Sunil V. Sharma,^[a] † Christopher Cartmell,^[a] † Jinlian Zhao,^[a] Paco Cárdenas,^[c] and Rebecca J. M. Goss^[a]* *Chem. Eur. J.* **2019** <https://doi.org/10.1002/chem.201901327>
6. Discovery pipelines for marine resources – an ocean of opportunity for biotechnology? D. Smith, A. Buddie, R. J. M. Goss, J. Overman, *World Journal of Microbiology and Biotechnology* **2019** 35 (7), 107
7. Isotopic labeling studies reveal the patulin detoxification pathway by the biocontrol yeast *Rhodotorula kratochvilovae*
Cristina Pinedo, Sandra A. I. Wright, Isidro G. Collado, Rebecca J. M. Goss, Raffaello Castoria, Patrizia Hrelia, Francesca Maffei, Rosa Durán-Patrón, *Journal of natural products* 81 (12), 2692-2699
8. Halogenases: powerful tools for biocatalysis (mechanisms applications and scope)
DS Gkotsi, J Dhaliwal, MMW McLachlan, KR Mulholand, RJM Goss*
Current opinion in chemical biology, **2018** 43, 119-126
9. Discovery and utilisation of wildly different halogenases, powerful new tools for medicinal chemistry: [patent application number GB1803491.8](#)
10. Bromotryptophans and their incorporation in cyclic and bicyclic privileged peptides, **2018**, *Biopolymers*, in press

11. Short and Sweet: Pac13 is a Small, Monomeric Dehydratase that Mediates the Formation of the 3'-Deoxy Nucleoside of Pacidamycin Antibiotics.
Freideriki Michailidou, Chun-wa Chung, Murray Brown, Andrew Bent, William Leavens, Sean Lynn, James H. Naismith and Rebecca J. M. Goss* *Angewandte* **2017** DOI 10.1002/ange.201705639
12. Living GenoChemetics: Hyphenating Synthetic Biology and Synthetic Chemistry *in vivo*
Sunil V. Sharma,^{1,2,§} Tong Xiaoxue,^{1,†,§} Cristina Pubill-Ulldemolins,^{1,2} Christopher Cartmell,^{1,2,§} Emma Bogosyan,^{1,†} Emma J. Rackham,^{1,†} Enrico Morelli,^{1,2} Refaat Hamed,¹ & Rebecca J. M. Goss^{1,*}
Nature Communications, **2017**, 8, 229 doi:10.1038/s41467-017-00194-3
13. Palladium –Catalysed α -Arylation of Ketones in Aqueous Media
V. Snieckus, C. N. Garcia-Irizarry, Y. Renault, S. V. Sharma,^[a] S. P. Nolan^[b,c] E. Marelli and R. J. M. Goss,
Synfacts, **2017**, 13, 7, 0689
14. A translational synthetic biology platform for rapid access to gram-scale quantities of novel drug-like molecules.
James Reed¹, Michael J. Stephenson¹, Karel Miettinen^{2,3}, Bastiaan Brouwer¹, Aymeric Leveau¹, Paul Brett¹, Rebecca J.M. Goss^{4,5}, Alain Goossens^{2,3}, Maria A. O'Connell⁶ and Anne Osbourn^{1*}
Metabolic Engineering, **2017**, 42, 185-193
15. Mild, aqueous α -arylation of ketones: toward new diversification tools for halogenated metabolites and drug molecules, Enrico Marelli^{*,[a]} Johann Renault,^[a] Sunil V. Sharma,^[a] Steven P. Nolan^[b,c] and Rebecca J. M. Goss^{*,[a]} *Chemistry a European Journal*, **2017**, DOI:10.1002/chem.201700680
16. Discovery of a novel and unusual flavin-dependent 5-hydroxytryptophan halogenase from the metagenome of the marine sponge *Theonella swinhoei*, Duncan R. M. Smith, Agustinus R. Uria, Daniela Milbredt, Karl-Heinz van Pée, Jörn Piel^{*}, Rebecca J. M. Goss^{*} *ACS Chemical Biology* **2017** 12, 1281-1287
17. Sonogashira diversification of unprotected halotryptophans, halotryptophan containing tripeptides and a new to nature bromometabolite in water
M. J. Corr,^a S. Sharma,^a C. Pubill-Ulldemolins,^a R. T. Bown,^a P. Poirrot,^b D. R. M. Smith,^a C. Cartmell,^a T. Abou Fayad,^c R. J. M. Goss^{a*} *Chem. Sci.*, **2017**, DOI: [10.1039/C6SC04423A](https://doi.org/10.1039/C6SC04423A) (Edge Article)
18. Contemporary Catalysis: An introduction to biocatalysis (Book chapter for RSC Catalysis), Ron Wever^{*}, Rebecca J. M. Goss, Edward Spence, Xiaoxue Tong and A. F. Hartog, RSC publishing, **2017**, *in press*
19. The Generation of New to Nature Natural Products Through Synthesis and Biosynthesis: Blending Synthetic Biology with Synthetic Chemistry (Book chapter for Chemical biology of Natural Products, editors: David Newman and Gordon Cragg), Chris Bailey, Emily Abraham and Rebecca J. M. Goss^{*}, CRC publishing, **2017** *in press*
20. Contemporary Catalysis: Biocatalysis (Book chapter for RSC Catalysis) Ron Wever^{*}, M. J. Corr, Rebecca J. M. Goss, Paul Kamer, RSC publishing, **2017**, *in press*
21. Bluegenics: bioactive natural products of medicinal relevance and approaches to their diversification, Joe Zarins Tutt, Emily Abraham and Rebecca J. M. Goss^{*}, *Prog. Mol. Biol.*, Blue Biotechnology, **2017**, 55, 159-186.
22. Rapid enzyme regeneration results in the striking catalytic longevity of an engineered, single species, biocatalytic biofilm. Xiaoxue Tong^{a,b}, Tania Triscari Barberi^{a,b}, Catherine H. Botting^b, Sunil V. Sharma^{a,b},

- Mark J. H. Simmons^c, Tim W. Overton^c and Rebecca J. M. Goss^{a,b} * *Microbial Cell Factories*, **2016**, *15*, article 180
23. One-pot access to l-5,6-dihalotryptophans and l-alknyltryptophans using tryptophan synthase, Michael Corr, Duncan Smith, Rebecca J. M. Goss* *Tetrahedron*, **2016**, *72*, 7306-7310.
 24. Prospecting for new bacterial metabolites: a glossary of approaches for inducing, activating and upregulating the biosynthesis of bacterial cryptic or silent natural products.
J. Zarins Tutt, T. Triscari Barberi, H. Gao, A. Mearns-Spragg, L. Zhang, D. J. Newman and R. J. M. Goss* *Nat. Prod. Rep.*, **2016**, *33*, 54-72
 25. Promiscuous indolyl vinyl isonitrile synthases in the biogenesis of hapalindole-type alkaloids
Kuljira Ittiamornkul, Qin Zhu, Duncan Smith, Danai Gkotsi, Matthew L. Hillwig^a Nicole Nightingale, Rebecca J. M. Goss and Xinyu Li^a. *Chem. Sci.*, 2015, *6*, 6836-6840
 26. A One-Pot Synthesis of Symmetrical and Unsymmetrical Dipeptide Ureas
Fayad, D. Day and R. J. M. Goss,* *EJOC*, **2015**, *25*, 5603-5609
 27. Suzuki–Miyaura Diversification of Amino Acids and Dipeptides in Aqueous Media
Tom Willemse, Karolien Van Imp, Rebecca J. M. Goss, Herman W. T. Van Vlijmen, Wim Schepens, Bert U. W. Maes* and Steven Ballet* *Chem Cat Chem*, **2015**, *7*, 2055-2070([back cover](#))
 28. Simple and scalable access to L-7-halotryptophans and other L-halotryptophans through an improved one-pot biotransformation
Tom Willemse, Duncan R. M. Smith, Danai S. Gkotsi, Wim Schepens, Bert U. W. Maes, Steven Ballet, and Rebecca J. M. Goss *J. Peptide Science* 2014, *s143-s144*
 29. Filipins: the first antifungal “weed killers” identified from bacteria isolated from the trap-ant, H. Gao, S. Gruschow, M. Hutchings, D. Yu, and R. J. M. Goss* *RSC Adv.*, **2014**, *4*, 57267 – 57270
 30. A radical finding *Nature Chemical Biology News&Views* ,
R. J. M. Goss,* and S. Gruschow, *Nature Chemical Biology News&Views*, **2014**, *10*, 878–9.
 31. Mechanism of Action of the Uridyl Peptide Antibiotics: An Unexpected Link to a Protein-Protein Interaction Site in Translocase MraY
Rodolis M. T., Mihalyi A., Ducho C., Gust B., Goss R. J. M., Van Lanen S., and Bugg T. D. H*, *Chem. Comm.* **2014**, *50*, 13023-5.
 32. Science of Synthesis, Halogenases (book chapter)
Gruschow S, Smith D, Gkotski D., Goss R. J. M. Goss,* *Science of Synthesis*, **2014**, 313-360
 33. Simple and scale-able access to 7-halotryptophans, including L-7-iodotryptophan, through a one-pot biotransformation
D. Smith, S. Ballet, B. U. Maes, T. Willemse and R. J. M. Goss,* *Orglett.* **2014**, *16*, 10, 2622-2625
 34. Access to High Value Natural and Unnatural Products through Hyphenating Chemical Synthesis and Biosynthesis
D. Smith, E. Bogosyan, K. Mahoney and R. J. M. Goss,* *Synthesis*, **2014**, *46*, 2122-2132.
 35. Analysis and Optimisation of the Physiology of Engineered Biofilms for Biotransformations
J. T. Leech, I. Vizcaino-Caston, T. Barberi, R. J. M. Goss, M. Simmons, T. W. Overton
New Biotechnology, **2014**, *31*, S86
 36. Edited Book: Natural Products: Discourse, Diversity and Design
E. Osbourn, G. Carter, and R. J. M. Goss,
Wiley-Blackwell, **2014**, ISBN: 978-1-118-29806-0

37. Optimisation of engineered *Escherichia coli* biofilms for enzymatic biosynthesis of L-halotryptophans
S. Perni, L. Hackett, R. J. M. Goss, M. J. Simmons and T. W. Overton*
AMB Express, **2013**, doi: 10.1016/j.cbpa.2013.01.018.
38. Scope and potential of halogenases in biosynthetic applications
D. R. Smith, S. Gruschow, R. J. M. Goss
Curr. Opin. Chem., Biol., **2013**, 17, 276-283
39. Glycosyltransferases from oat (*Avena*) implicated in the acylation of avenacins.
Owatworakit, B. Townsend, T. Louveau, H Jenner, M. Rejzek, R. K. Hughes, G. Saalbach, X Qi, S Bakht, A. DebRoy, S. T. Mugford, R. J. M. Goss, R. A. Field, A. Osbourn
J. Biol. Chem., **2013**, 288, 3696-3704.
40. Isolating antifungals from fungus-growing ant symbionts using genome guided chemistry
Ryan F. Sepke, S. Gruschow, R. J. M. Goss, and M. I. Hutchings*
Meth. Enzymol., **2012**, 517, 47-70
41. Crystallization and preliminary X-ray analysis of Pac17 from the pacidamycin biosynthetic cluster of *Streptomyces coeruleorubidus*
Daniel R. Tromans, Clare E. M. Stevenson, Rebecca J. M. Goss and David M. Lawson*
Acta Crystallographica Section F., **2012**, 68, 971-974
42. The Generation of “unNatural” Products, Combined Synthetic and Biosynthetic Approaches to Making Natural Product Analogues: Synthetic Biology Meets Synthetic Chemistry
R. J. M. Goss,* S. Shankar, and A. Abou Fayad,
Nat. Prod. Rep., **2012**, 29, 870-889
43. Engineered Biofilms: a new Generation of Immobilised Biocatalysts
M. Winn, J. M. Foulkes, S. Peroni, M. H. Simmons,* T. W. Overton,* and R. J. M. Goss* *Catal. Sci. and Technol.*, 2012, 2, 1544–1547,
44. Characterisation of Spin Coated Engineered *Escherichia coli* Biofilms using Atomic Force Microscopy A.N. Tsoligkas, J. Bowen, M. Winn, R. J. M. Goss, T. W. Overton, M. J. H. Simmons*,
Colloids Surf. B: Biointerfaces, **2012**, 89:152-60.
45. Biogenesis of the Unique Nucleoside of the Uridyl Peptide Antibiotics: Pacidamycin
E. Ragab, S. Gruschow, R. J. M. Goss,*
J. Am. Chem. Soc., **2011**, 133, 15288-91.
46. Diversity in natural product families is governed by more than enzyme promiscuity alone: establishing control of the pacidamycin portfolio
S. Gruschow, E. Rackham, R. J. M. Goss,*
Chem. Sci. **2011**, 2, 2182-2186
Highlighted in Chemistry World <http://www.rsc.org/chemistryworld/News/2011/August/1108110L.asp>
Highlight in C&EN News 89(34), August 22, 2011
RSC selected highlight of “cutting edge chemistry in 2011
<http://www.rsc.org/chemistryworld/News/2011/December/chemistry-articles-most-exciting-events-2011.asp>
47. A single *Streptomyces* mutualist makes multiple antifungals: a weedkiller cocktail used by the fungus farming ant *Acromyrmex octospinosus* ,
R. F. Seipke, J. Barke, C. Brearley, L. Hill, D. W. Yu, R. J. M. Goss, M. I. Hutchings*
PLoS ONE, **2011**, 8, e22028

48. Pacidamycin, Cluster Identification and Heterologous Expression
E. Rackham, S. Gruschow, R. J. M. Goss*
Bioeng. Bugs, **2011**, 2, 218-21.
49. Engineering Biofilms for Biocatalysis
A.N. Tsoligkas, M. Winn, J. Bowen, T. W. Overton, M. J. H. Simmons*, R. J. M. Goss*
ChemBioChem, **2011**, 12, 1391-1395
50. Highlights from the 46th EUCHEM Conference on Stereochemistry, Burgenstock, Switzerland, May 2011
E. Tate and R. J. M. Goss
Commissioned review for *Chem. Commun.*, **2011**, 47, 10869-73
51. Saponins, Biogenesis and Medicinal Properties
A. E. Osbourn*, R. A. Field, M. O'Connell, R. J. M. Goss,
Nat. Prod. Rep., **2011**, 28, 1261-8.
52. The total synthesis of chloptosin: A potent inducer of apoptosis in human pancreatic adenocarcinoma cell lines
A. J. Oelke, F. Antonietti, L. Bertone, D. J. France, R. J. M. Goss, T. Hofmann, S. Knauer, S. J. Moss, P. C. Skelton, R. M. Turner, G. Wuitschik, and S. V. Ley*
Chemistry - A European Journal, **2011**, 17, 4183-94.
53. Gene expression enabling synthetic diversification of unnatural products: chemogenetic generation pacidamycin analogs
Deb Roy, S. Gruschow, N. Cairns, R. J. M. Goss*,
J. Am. Chem. Soc., **2010**, 134, 1224-12245.
Highlighted in C.&EN. News, August 23rd, 2010.
54. Pacidamycin biosynthesis: Identification and heterologous expression of the first uridyl peptide antibiotic gene cluster
E. J. Rackham, S. Gruschow, A.E. Ragab, S. Dickens, and R. J. M. Goss*
ChemBioChem., **2010**, 11, 1700-1709
55. Direct evidence for the use of multiple antifungals by a leaf-cutting ant.
J. Barke, R. F. Seipke, S. Gruschow, M. J. Bibb, R. J. M. Goss, D. W. Yu, and M. I. Hutchings*
BMC Biol., **2010**, 8, 109
Labelled "Highly Accessed" <http://www.biomedcentral.com/1741-7007/8/109>
5400 downloads in the first month
56. New pacidamycins biosynthetically: probing N and C terminal substrate specificity of an unusual NRPS
A. E. Ragab, S Gruschow, E. J. Rackham, R. J. M. Goss,*
Org. Biomol. Chem., **2010**, 8, 3128-3129
57. Fluororapamycins generated through the exploitation of biosynthesis,
R. J. M. Goss,* S. Lanceron, A. D. Roy, S. Spague, Nur-e-Alam, D. L. Hughes, B. Wilkinson, S. J. Moss
ChemBioChem., **2010**, 11, 1439-4227
58. Antimicrobial nucleoside antibiotics targeting cell wall assembly: Recent advances in structure–function studies and nucleoside biosynthesis
M. Winn, R. J. M. Goss, K. Kimura and T. D. H. Bugg,*
Nat. Prod. Rep., **2010**, 27, 279-304.

59. A serine carboxypeptidase-like acyltransferase is required for synthesis of antimicrobial compounds and disease resistance in oats
S. T. Mugford, X. Qi, S. Bakht, L. Hill, E. Wegel, R. K. Hughes, K. Papadopoulou, R. Melton, R. J. M. Goss, and A. E. Osbourn*
Plant Cell, **2009**, 21, 2473-2484
60. New pacidamycin antibiotics through precursor-directed biosynthesis,
S. Grünschow, E. J. Rackham, B. Elkins, P. L. A. Newill, L. Hill, and R. J. M. Goss*
ChemBioChem., **2009**, 10, 355-360
61. Pd mediated cross-coupling of unprotected halotryptophans in water,
Deb Roy, M. Winn, G. Wagner, and R. J. M. Goss,*
Chem. Commun., **2008**, 39, 4831-4833
62. A convenient one-step synthesis of aminotryptophans and improved synthesis of halotryptophans,
M. Winn, A. Deb Roy, R. S. Parameswaran, and R. J. M. Goss*
Bioorg. Med. Chem. Let., **2008**, 18, 4508-4510.
63. Rapamycin: requirement for hydroxylation of the cyclohexane ring of starter acids prior to incorporation,
R. J. M. Goss,* S. E. Lanceron, N. J. Wise, and S. J. Moss
Org. Biomol. Chem., **2006**, 22, 4071-4073.
64. A convenient and environmentally friendly synthesis of L-halotryptophans,
R. J. M. Goss,* and P. L. A. Newill
Chem. Commun., **2006**, 47, 4924-4925.
65. A novel fluorinated erythromycin antibiotic
R. J. M. Goss,* and H. Hong,
Chem. Commun., **2005**, 31, 3983-3985.
-
66. Elucidating and harnessing biosynthesis in order to extend the portfolio of fluorinated “natural” products
R. J. M. Goss*
ABSTRACTS OF PAPERS OF THE AMERICAN CHEMICAL SOCIETY Volume: **243**
Meeting Abstract: **16-Fluo** Published: **March 25th 2012**
67. Elucidating and exploiting biosynthesis
R. J. M. Goss*
ABSTRACTS OF PAPERS OF THE AMERICAN CHEMICAL SOCIETY Volume: **242**
Meeting Abstract: **87-Biol** Published: **AUG 28 2011**
68. New unnatural products by harnessing biosynthesis
R. J. M. Goss*
ABSTRACTS OF PAPERS OF THE AMERICAN CHEMICAL SOCIETY Volume: **240**
Meeting Abstract: **518-ORGN** Published: **AUG 22 2010**
69. FLUO 13-Novel halogenated natural products from actinomycetes
R. J. M. Goss*
ABSTRACTS OF PAPERS OF THE AMERICAN CHEMICAL SOCIETY Volume: **236** Meeting
Abstract: **13-FLUO** Published: **AUG 17 2008**

70. Evidence that a Novel Thioesterase is Responsible for Polyketide Chain Release during Biosynthesis of the Polyether Ionophore Monensin
M. Harvey, M. A. Jones, Z. A. Hughes-Thomas, R. J. M. Goss, V. M. Bolanos-Garcia, W. Kroutil, J. Staunton, P. F. Leadlay, and J. B. Spencer*
Chembiochem., **2006**, 7, 1435-1442.
71. Catalytically active tetra modular 6-deoxyethronolide B synthase fusion proteins.
C. M. Squire, R. J. M. Goss, H. Hong, P. F. Leadlay and J. Staunton,
Chembiochem., **2003**, 4, 1225-1228.
72. An assay for the enantiomeric analysis of [$^2\text{H}_1$]-fluoroacetic acid: An insight into the stereochemical course of fluorination during fluorometabolite biosynthesis in *Streptomyces cattleya*.
D. O'Hagan, R. J. M. Goss, A. Meddour, and J. Courtieu,
J. Am. Chem. Soc., **2003**, 125, 379-387.
73. Extreme enantiomeric discrimination of fluoroalkanes using deuterium NMR in liquid crystalline media.
M. Tavasli, J. Courtieu, R. J. M. Goss, A. Meddour, D. O'Hagan,
Chem. Commun., **2002**, 8, 844-.
74. Biosynthesis of longianone from *Xylaria longiana*: a metabolite with a biosynthetic relationship to patulin.
R. J. M. Goss, J. Fuchser, and D. O'Hagan,
Chem. Commun., **1999**, 22, 2255-2256.