

George M. Burslem PhD

Employment

University of Pennsylvania	January 2020
Assistant Professor Department of Biochemistry and Biophysics, Perelman School of Medicine Department of Cancer Biology Penn Epigenetics Institute	
Yale University	September 2015 to December 2019
Post-Doctoral Researcher – Protein Degradation Supervised by Professor Craig Crews Design, Synthesis and Investigation of small molecule proteolysis targeting chimera (PROTACs) for selective protein degradation and other chemical probes for the elucidation of biological processes. Supported by a Leukemia and Lymphoma Society Career Development Award.	
University of Leeds	July 2015 to August 2015
Post-Doctoral Researcher – Protein Labelling Supervised by Dr Robin Bon The labelling and purification of biomolecules for <i>in-vivo</i> imaging of disease relevant proteins. Including the labelling of protein and RNA aptamers with both MRI contrast agents and photo-acoustic dyes.	

Education

University of Leeds	September 2011 to June 2015
PhD – An Integrated Approach to the Discovery of Inhibitors of Protein-Protein Interactions Supervised by Professor Adam Nelson and Professor Andrew Wilson Examined by Professor Chris Schofield FRS Engineering and Physical Sciences Research Council (EPSRC) Doctoral Training Grant with additional industrial funding (AstraZeneca CASE Award)	
University of Bristol	September 2007 to July 2011
MSci Chemistry with Industrial Experience First Class Honours MSci Project Supervisor: Prof. Tom Simpson FRS FRSE The Synthesis of Chemical Probes to Investigate the Kinase Involved in Differentiation in <i>Dictyostelium Discoideum</i>. The synthesis of a natural product and analogues followed by conjugation to magnetic beads for use in pull-down assays to identify a key kinase in the differentiation cascade of <i>Dictyostelium Discoideum</i> . Second MSci Project Supervisor: Prof. Chris Willis The Synthesis of Biosynthetic Intermediates to Investigate the Biosynthesis of Squalenstatin Tetraketide. The synthesis of proposed biosynthetic intermediates of Squalenstatin tetraketide for use in feeding studies to investigate the role of stereochemistry in the programming of iterative polyketide synthesis.	

Other Relevant Employment

Employer and dates	Job Description
Pfizer Research and Development (Sept 2009 to Aug 2010)	Industrial Trainee in the Chemical Biology group, Sandwich, UK. Synthesising and working with small molecules, peptides and fluorescent dyes to elucidate biology of on-going drug discovery projects.
Pfizer Research and Development (July 2008 to Aug 2008)	Intern in Cardiovascular, Metabolic and Endocrine Diseases Research unit, Groton, USA. Synthetic organic project work on substituted pyrrolopyrimidines with biological activity.
Pfizer Manufacturing (Oct 2006 to Aug 2007)	Laboratory Technician in the Safety, Environmental and Microbiology section, Sandwich, UK. Analytical chemistry in GMP controlled laboratories.

Publications

- Targeting BCR-ABL1 in Chronic Myeloid Leukemia by PROTAC-mediated Targeted Protein Degradation,** G.M. Burslem, A. Reister-Schultz, D.P. Bondeson, C. Eide, S. Savage, B. Druker and C.M. Crews, *Cancer Research*, 2019, DOI: 10.1158/0008-5472.CAN-19-1236

2. **Protein Folding State-Dependent Sorting at the Golgi Apparatus**, D. Hellerschmied, Y.V. Serebrennik, L. Shao, G.M. Burslem and C.M. Crews, *Molecular Biology of the Cell*, 2019, DOI:10.1091/mbc.E19-01-0069
3. **Enhancing Antiproliferative Activity and Selectivity of a FLT-3 Inhibitor by Proteolysis Targeting Chimera Conversion**, G.M. Burslem, J. Song, X. Chen, J. Hines and C.M. Crews, *J. Am. Chem. Soc.*, 2018, **140**, 16428
- PPI-Net Paper of the Month
4. **Efficient Synthesis of Immunomodulatory Drug Analogues Enables Exploration of Structure Degradation Relationships**, G.M. Burslem*, P. Ottis, S. Jaime-Figueroa, A. Morgan, P.M. Cromm, M. Toure and C.M. Crews*, *ChemMedChem*, 2018, **12**, 1508 *Co-corresponding authors
- Most Accessed Article August 2018
5. **Lessons on Selective Degradation with a Promiscuous Warhead: Informing PROTAC Design**, D.P. Bondeson, B.E. Smith, G.M. Burslem, A.D. Buhimschi, J. Hines, S. Jaime-Figueroa, J. Wang, B. Hamman, A. Ishchenko, C.M. Crews, *Cell Chemical Biology*, 2018, **25**, 78
-Highlighted in *Cell Chemical Biology*, 2018, **25**, 4
-Highlighted in F1000 Prime
6. **The Advantages of Targeted Protein Degradation over Inhibition: a RTK Case Study**, G.M. Burslem, B.E. Smith, A. Lai, S. Jaime-Figueroa, D. McQuaid, D.P. Bondeson, M. Toure, H. Dong, Y. Qian, J. Wang, A.P. Crew, J. Hines and C. M. Crews, *Cell Chemical Biology*, 2018, **25**, 67
-Highlighted in *Cell Chemical Biology*, 2018, **25**, 4
7. **Small Molecule Modulation of Protein Homeostasis**, G.M. Burslem and C.M. Crews, *Chemical Reviews*, 2017, **117**, 11269
8. **Double Quick, Double “Click” Reversible Peptide “Stapling”**, C.M. Grison, G.M. Burslem, J.A. Miles, L. Pilsl, D.J. Yeo, S.L. Warriner, M. E. Webb and A. J. Wilson, *Chemical Science*, 2017, **8**, 5166
9. **Hypoxia Inducible Factor as a Model for Studying Inhibition of Protein-Protein Interactions**, G.M. Burslem, H.F. Kyle, A.S. Nelson, T.A. Edwards, A.J. Wilson, *Chemical Science*, 2017, **8**, 4188
10. **Expeditious Synthesis of Isoquinolones and Isocoumarins with a Vinyl Borane as an Acetylene Equivalent**, M. Toure, S. Jaime-Figueroa, G.M. Burslem, C.M. Crews, *Eur. J. Org. Chem.*, 2016, **24**, 4171
-Highlighted in *Synfacts*, 2016, **12**(10), 1027.
11. **Towards "Bionic" Proteins: Replacement of Continuous Sequences from HIF-1 α with Proteomimetics to Create Functional p300 Binding HIF-1 α Mimics**, G.M. Burslem, H.F. Kyle, A. L. Breeze, T.A. Edwards, S.L. Warriner, A. S. Nelson and A.J. Wilson, *Chem. Commun.*, 2016, **52**, 5421
12. **Synthesis of Highly Functionalized Oligobenzamide Proteomimetic Foldamers by Late Stage Introduction of Sensitive Groups**, G.M. Burslem, H.F. Kyle, P. Prabhakaran, A. L. Breeze, T.A. Edwards, S.L. Warriner, A. Nelson and A.J. Wilson, *Org. Biomol. Chem.* 2016, **14**, 3782
13. **Trivalent Gd-DOTA reagents for modification of biomolecules**, M.J. Fisher, D.J. Williamson, G.M. Burslem, J.P. Plante, I.W. Manfield, C. Tiede, J.R. Ault, P.G. Stockley, S. Plein, A. Maqbool, D.C. Tomlinson, R. Foster, S.L. Warriner and R.S. Bon, *RSC Adv.*, 2015, **5**, 96194
14. **Exploration of the HIF-1 α /p300 binding interface using peptide and adhiron phage display technologies to locate binding hot-spots for inhibitor development**, H. F. Kyle, K. F. Wickson, J. Stott, G. M. Burslem, A. L. Breeze, D. C. Tomlinson, S. L. Warriner, A. Nelson, A. J. Wilson and T. A. Edwards, *Mol. Biosyst.*, 2015, **11**, 2738
-Highlighted as a “Hot Article”
15. **Development of Solvent-Free Synthesis of Hydrogen-Bonded Supramolecular Polyurethanes**, K.A. Houton, G.M. Burslem and A.J. Wilson, *Chemical Science*, 2015, **6**, 2382
16. **Aminomethyl hydroxylation of alkenes: Exploitation in the synthesis of scaffolds for small molecule libraries**, I. Colomer, O. Adeniji, G.M. Burslem, P. Craven, M.O. Rasmussen, A. Willaume, T. Kalliokoski, R. Foster, S. Marsden and A. Nelson, *Bioorganic and Medicinal Chemistry*, 2015, **23**, 2736
17. **Multivalent helix mimetics for PPI-Inhibition**, A. Barnard, J. Miles, G.M. Burslem, A.M. Barker and A.J. Wilson, *Org. Biomol. Chem.*, 2015, **13**, 258
18. **Orthogonal functionalization of α -helix mimetics**, A. Barnard, K. Long, D.J. Yeo, J. Miles, V. Azzarito, G.M. Burslem, P. Prabhakaran, T.A. Edwards and A.J. Wilson, *Org. Biomol. Chem.*, 2014, **12**, 6794
19. **Small molecule proteomimetic inhibitors of the HIF-1 α /p300 protein-protein interaction**, G.M. Burslem, H. Kyle, A. Breeze, T.A. Edwards, A. Nelson, S.L. Warriner and A.J. Wilson, *ChemBioChem*, 2014, **15**, 1083
-Highlighted in *Chemistry Views Magazine* (DOI: 10.1002/chemv.201400035),
-Most Accessed Article May 2014,
-Top 5 Most Accessed Article in 2014,
20. **A modular lead-oriented synthesis of diverse piperazine, 1,4-diazepane and 1,5-diazocane scaffolds**, T. James, P. MacLellan, G.M. Burslem, I. Simpson, A. Grant, S.L. Warriner, V. Sridharan and A. Nelson, *Org. Biomol. Chem.*, 2014, **12**, 2584

-Highlighted in Chemistry Views News Section

21. **Synthesis of oligobenzamide α -helix mimetics**, G.M. Burslem and A.J. Wilson, *Synlett*, 2014, **25**, 324
-Featured on front cover
22. **Click-enabled heterotrifunctional template for sequential bioconjugation**, D.M. Beal, V.E. Albrow, G.M. Burslem, L. Hitchen, C. Fernandes, C. Laphorn, L.R. Roberts, M.D. Selby and L.H. Jones., *Org. Biomol. Chem.*, 2012, **10**, 548
23. **In-cell click labelling of small molecules to determine subcellular localisation**, L.H. Jones, D. Beal, M.D. Selby, O. Everson, G.M. Burslem, P. Dodd, J. Millbank, T. Tran, F. Wakenhut, E.J.S. Graham and P. Targett-Adams, *J. Chem. Biol.*, 2011, **4**, 49

Patent Applications

U.S. Application No.: 62/438,844 – Compounds and Methods for the Targeted Degradation of Fetal Liver Kinase Polypeptides

U.S. Application No.: 62/438,901 – EGFR-Based PROTAC Compounds and Associated Methods of Use

U.S. Application No.: 62/622,596 – Imide-Based Modulators of Proteolysis and Associated Methods of Use

Funding

Leukemia and Lymphoma Society Grant	PI: Craig Crews	June 2016-June 2017
Protein Degradation Approaches for the Treatment of Chronic Myeloid Leukemia		
Role: Co-Investigator and co-author		\$75,000
Yale SPORE Development Grant	PI: Craig Crews	Aug 2016-Aug 2017
Targeted Degradation of Tyrosine Kinase Inhibitor Resistant Epidermal Growth Factor Receptor Mutants in Lung Cancer		
Role: Named Personnel and co-author		\$50,000
Leukemia and Lymphoma Society Career Development Grant		July 2017-June 2020
A Protein Degradation Approach for the Treatment of Acute Myeloid Leukemia		
Role: Principal Investigator		\$180,000

Conference Presentations

Selected Oral Presentations:

2nd Medicinal Chemistry Summit: Europe, London, 29-30 October 2018, “PROTACs: Inducing Protein Degradation as a Therapeutic Strategy”

Global Medicinal Chemistry Leaders Summit, London, 27-28 November 2017, “PROTACs: Inducing Protein Degradation as a Therapeutic Strategy”

Mastering Medicinal Chemistry – Hot Topics, Emerging Themes and New Technologies, Part of the World Preclinical Congress, Boston, 13-14 June 2017, “PROTACs: Inducing Protein Degradation as a Therapeutic Strategy”

15th Tetrahedron Symposium – Challenges in Bioorganic and Organic Medicinal Chemistry, London, 24th-27th June 2014, “The Design, Synthesis and Evaluation of Inhibitors of the HIF-1 α /p300 Protein-Protein Interaction” – Selected from over 450 abstracts – Available as part of Online Symposium

25th SCI Northern Postgraduate Symposium on Novel Organic Chemistry, University of Sheffield, 7th April 2014, “The Design, Synthesis and Evaluation of Inhibitors of the HIF-1 α /p300 Protein-Protein Interaction”

7th RSC Biological and Medicinal Chemistry Section Post-Graduate Symposium, University of Cambridge, 13th December 2013, “The Design, Synthesis and Evaluation of Inhibitors of the HIF-1 α /p300 Protein-Protein Interaction” – Highlighted in Royal Society of Chemistry News

15th RSC Bioorganic Group Firth Conference, University of Edinburgh – Firth Outdoor Centre, 13th-15th September 2013, “Helix Mimetics as inhibitors of the HIF-1 α /p300 Protein-Protein Interaction”

Invited Seminars:

Institute for Structural & Chemical Biology/Department of Molecular and Cell Biology, University of Leicester, 23rd May 2018

Chemical Biology Consortium, NCI Experimental Therapeutic Program, Frederick National Laboratory for Cancer Research, 9th February 2017

Selected Poster Presentations:

Gordon Research Conference on Bioorganic Chemistry, Proctor Academy, Andover, New Hampshire, USA, 10th-15th June, 2018, “Expanding the Scope of Targeted Protein Degradation”

RSC Chemical Biology Symposium, Burlington House, London, 21st May, 2018, “Expanding the Scope of Targeted Protein Degradation”

EMBO – Chemical Biology, EMBL Heidelberg, Germany, 20th-23rd August 2014, “Design, Synthesis and Evaluation of Inhibitors of the HIF-1 α /p300 Protein-Protein Interaction”

Gordon Research Conference on Bioorganic Chemistry, Proctor Academy, Andover, New Hampshire, USA, 8th-13th June, 2014, “Design, Synthesis and Evaluation of Inhibitors of the HIF-1 α /p300 Protein-Protein Interaction”

RSC Organic Division Poster Symposium, Chemistry Centre, London, 2nd December 2013, “Design, Synthesis and Evaluation of Inhibitors of the HIF-1 α /p300 Protein-Protein Interaction”

Astbury Centre for Structural Molecular Biology Retreat, Cheshire, 19th-20th September 2013, ”Structural Molecular Biology of the eIF4e/eIF4g Protein-Protein Interaction for Inhibitor Design”

RSC Bioorganic Group Postgraduate Symposium, Manchester, 11th April 2013, “The Development of Biophysical Assays for Protein-Protein Interactions: HIF-1 α /p300 and eIF4e/eIF4g”

Protein-Protein Interactions Network International Conference, London, 16th-17th January 2013, “The Development of Biophysical Assays for Protein-Protein Interactions: HIF-1 α /p300 and eIF4e/eIF4g”

Prizes and Awards

Royal Society of Chemistry, Biological and Medicinal Chemistry Section 2014 International Travel Prize Winner – “in recognition of the excellent research carried out during his PhD studies” £1500 to attend an international conference

Drug Discovery 2014 Young Scientist Award – cash prize; invitation and funding to attend and present at SLAS Annual Conference, February 2015, Washington DC, USA

J.B. Cohen Prize, University of Leeds, 2015 – awarded to the student whose thesis “contains the most valuable contribution to knowledge”

Commendation for Research Excellence, University of Leeds, 2015

Leukemia and Lymphoma Society Career Development Award, 2017-2020 - \$180,000 fellowship to support postdoctoral research.

Other Achievements

European Lead Factory Library Chemistry Proposal – Utilization of the Amido-Alkylation Reaction – Accepted, funded and validated for exploitation by the European Lead Factory consortium – leading to the inclusion of > 500 compounds in the screening library and a publication (Colomer *et al.*, Publication 16)

Nominated for Pfizer Green Chemistry Award for the article “**Phosphine free and water soluble Palladium catalyst for Suzuki-Miyaura Coupling**” G. Burslem and D. Beal, *Synthon*, 4, 2010 (Pfizer internal synthetic journal)

Teaching

Certificate of College Teaching Preparation Course (Yale University, 2018-Present)

Currently participating in this program to develop additional teaching skills including curriculum development and assessment strategies.

Lecturing to Pharmacology Students (Principles in Pharmacology, Pharm 504, Yale University, 2016-Present)

Preparing and delivering course entitled “Small Molecule Control of Intracellular Protein Levels”, preparing and marking exam questions.

Development of a New Undergraduate Teaching Laboratory Experiment (University of Leeds, 2014-2015)

Funded by the RSC to develop a research driven experiment based on enzymatic resolutions for process chemistry, developing synthetic procedures, preparing lectures, workshops and assessment material.

Resources available online at: www.rsc.org/learn-chemistry/resource/RES00002297/

Undergraduate Workshop Support (University of Leeds, 2011-2015)

Assisting in first year undergraduate workshops on carbonyl chemistry, answering questions and explaining concepts using example problems.

Undergraduate Supervision, Teaching Laboratories (University of Leeds 2011-2014)

Demonstrating in teaching laboratories, ensuring experiments are carried out correctly and safely and marking students work.

Outreach

Judge at Yale Undergraduate Research Symposium (Yale, 2018)

Volunteer judge for poster presentations at Yale Undergraduate Research Symposium.

Open Day Demonstrations (University of Leeds, 2013-2014)

Demonstrations and explanations for visiting high school students and families.

Reviewing

Journals: ACS Central Science, Journal of the American Chemical Society, Cell Chemical Biology, Journal of Medicinal Chemistry, EBioMedicine, Medicinal Research Reviews, ACS Medicinal Chemistry Letters

Grants: Biology and Biological Sciences Research Council (UK), National Science Centre (Poland)

Professional Memberships

Member of the Royal Society of Chemistry (MRSC)

Member of the Society of Chemical Industry

Member of the American Chemical Society

Member of the International Chemical Biology Society

Associate Member of American Association for Cancer Research