

JANICE R. ALDRICH-WRIGHT

CURRICULUM VITAE

Qualifications and Current Appointment: B.App.Sc.(Hons. 2.1) 1979 University of Technology Sydney; Ph.D. 1993 Macquarie University; Cornforth Medal 1993 for best PhD in chemistry in Australian. Fellow of the Royal Australian Chemical Institute, Associate Professor in Chemistry University of Western Sydney.

Relevant Employment History. Industrial Experience 1977-1984, Tutor (TAFE) 1985-87, Tutor (Nepean/CAE) 1987-91, Scientific Officer (UWS) 1991-1993, Associate Lecturer (UWS) 1993-1994, Lecturer (UWS) 1994-2000, Senior Lecture (UWS), 2000-2004, Associate Professor 2005- .

Assoc.-Prof. Aldrich-Wright has made significant contributions to the investigation of metal complex-DNA interactions. Work initiated in her laboratory at UWS, and carried out in collaboration with Assoc.-Prof. G. Collins (UNSW), has demonstrated by ^1H NMR that both Δ - and Λ -[Ru(2,9-phenMe₂)₂(dpq)]²⁺ and Δ -[Ru(2,9-phenMe₂)₂(dppz)]²⁺ bind to the oligonucleotide d(GTCGAC)₂ by intercalation within the minor groove. These were the first octahedral metal complexes reported to exhibit minor-groove intercalation. This finding has been controversial, but is significant because the differences in binding of these simple molecules must be well understood if sequence-selective binding by polynuclear metal complexes is to be realised. The work has influenced researchers to re-investigate the DNA interactions of metallointercalators with a less prejudiced view about the nature and extent of intercalation. Research conducted at UWS and in collaboration with Dr R. Fenton (University of Sydney) has resulted in the discovery of a new group of platinum-based compounds that differ significantly in their mode of action from anticancer platinum compounds in current clinical use. As a consequence, these novel compounds are the focus of a Patent. Assoc.-Prof. Aldrich-Wright's publications have appeared in high profile journals, she has over 325 citations to her work with an average citation rate per paper of 12.04 (higher than the chemistry average), and the frequency of publication is rapidly increasing. The recent number of conference papers (thirty seven in 2003-2008) indicates the high profile of her research group and the high impact of the research being undertaken. In addition, there have been two provisional and two international applications.

PUBLICATIONS SUMMARY

Patents	4
Journal publications:	40
Lectures:	28 (Conference and Invited)
Conference abstracts:	63

KEY RELEVANT RESEARCH PUBLICATIONS (1994-PRESENT).

Patents

1. Fenton, R.R. and Aldrich-Wright, J.R. Metal Complexes and Therapeutic uses thereof, Australian Provisional Patent, Application Number PR3302, Feb., (2001)
2. Fenton, R.R. and Aldrich-Wright, J.R. Metal Complexes and Therapeutic uses thereof, International Patent, Application Number PCT/AU02/00167, Oct., (2002)
3. Aldrich-Wright, J.R., Jaramillo, D., Brodie, C. and Howard, W. Sequence Selective Compounds Australian Provisional Patent, Application Number PR905512, Oct. (2003)
4. Aldrich-Wright, J.R., Jaramillo, D., Brodie, C. and Howard, W. Taleb, R. Sequence Selective Compounds, International Patent, PCT/AU2004/001368, Oct. (2004)

Refereed Articles and Monographs:

1. **Aldrich-Wright, J. R.** Chiral Discrimination Processes in Some Metal Chelate Systems of Biological Interest, *Journal and Proceedings of the Royal Society of New South Wales*, (1994), **127**, 155-156.
2. **Aldrich-Wright, J. R.**, Greguric, I., Vagg, R. S., Vickery, K. and Williams, P. A. The Development of DNA-Immobilised Chromatographic Stationary Phases for Optical Resolution and DNA-affinity Comparison of Metal Complexes, *J. Chrom. A.*, (1995), **718**, 436-443.
3. **Aldrich-Wright, J. R.**, Newman, P. D., Rao, K. R. N., Vagg, R. S., and Williams, P. A. (1995) Chiral Metal Complexes. 42. Reversed-phase High Performance Liquid Chromatographic Separation of Racemic Dipeptides as Their Ternary Co(III) Complexes With a Chiral Triamine. *J. Chrom.*, (1995), **693**, 366-370.
4. **J. Aldrich-Wright**, Vagg, R. S., and Williams, P. A. N₄-Tetradentate Ligand Design, *Coord. Chem. Rev.*, (1997), **166**, 361-389.
5. Greguric, I., **Aldrich-Wright, J. R.** and Collins, J. G. A ^1H NMR Study of the Binding of Δ -[Ru(phen)₂DPQ]²⁺ to the Hexanucleotide d(GTCGAC)₂-Evidence for Intercalation From the Minor Groove, *J. Am. Chem. Soc.*, (1997), **119**, 3621-3622.

6. Rutherford, T. J., Pellegrini, P. A., **Aldrich-Wright, J. R.**, Junk, P. C. and Keene, F. R. Isolation of Enantiomers of a Range of Tris(bidentate)ruthenium(II) Species Using Chromatographic Resolution and Stereoretentive Synthetic Methods, *Eur. J. Inorg. Chem.*, (1998), 1677-1688.
7. Collins, J. G., Sleeman, A. D., **Aldrich-Wright, J. R.**, Greguric, I. and Hambley, T. W. A ¹H NMR Study of the Binding of Ruthenium(II) Polypyridyl Complexes, *Inorg. Chem.* (1998), **37**, 3133-3141.
8. **Aldrich-Wright, J. R.**, Greguric, I. D., Pellegrini, P. A., Lau, C. H. Y. and Collins, J. G. Transition metal complexes as probes for DNA, *Recent Res. Devel. Inorg. Chem.*, (1998), **1**, 13-37.
9. Collins, J. G., **Aldrich-Wright, J. R.**, Greguric, I. D. and Pellegrini, P. A. Binding of the Δ- and Λ-enantiomers of [Ru(dmphen)₂DPQ]²⁺ to the hexanucleotide d(GTCGAC)₂, *Inorg. Chem.* (1999), **38**, 5502-5509.
10. Collins, J. G., Rixon, R.M. and **Aldrich-Wright, J. R.** (2000), Interaction of [Pt(en)(phen)]²⁺ and [Pt(en)(phi)]²⁺ with the hexanucleotide d(GTCGAC)₂: evidence for minor groove binding, *Inorg. Chem.* **39**, 4377-4378.
11. Greguric, A., Greguric, I. D., Hambley, T. W., Aldrich-Wright, J. R. and Collins, J. G. (2002) Minor groove intercalation of Δ-[Ru(Me₂phen)₂dppz]²⁺ to the hexanucleotide d(GTCGAC)₂. *Journal of the Chemical Society, Dalton Transactions*, (6), 849-855.
12. Aldrich-Wright, J. R., Fenton, R. F., Greguric, I. D., Hambley, T. W. and Williams, P. A. (2002) The stereospecific synthesis of Δ-α-{dipyrido[3,2-a:2'3'-c](6,7,8,9-tetrahydro)phenazine[N,N'-di(2-picoly)]-2,5-dimethyl-2S,5S-diaminocyclohexane}ruthenium(II)} and related β -isomers. *Journal of the Chemical Society, Dalton Transactions*, (24), 4666-4671.
13. Pellegrini, P. A. and **Aldrich-Wright, J.R.** (2003) Evidence for chiral discrimination of Ruthenium(II) polypyridyl complexes by DNA. *Dalton Trans.*, 176-183. (IF: 3.003)
14. Beck, J. L., Gupta, R., Urathamakul, T., Williamson, N., Sheil, M. M., **Aldrich-Wright, J.R.** and Ralph, S. F. (2003) Probing DNA selectivity of ruthenium metallointercalators using ESI mass spectrometry. *Chem. Comm.*, 626-627. (IF: 4.426)
15. **Aldrich-Wright, J.R.**, Williams, P.A. and Vagg, R.S. (2003) HPLC separation of diastomeric metal complexes of the form Δ, Λ-[Ru(diimine)₂(aminoacidate)]ⁿ⁺. *Aust. J. Chem.*, **56**, 1193-2000. (IF: 1.456)
16. Brodie, C., Collins, J.G. and **Aldrich-Wright, J.R.**, (2004) The biological activity of some square-planar platinum(II) metallointercalators. *Dalton Transactions*, 1145 – 1152. (IF: 3.003)
17. Brodie, C., Glazer, E., Luedtke, N., Tor, Y. and **Aldrich-Wright, J.R.** (2004) Nanomolar dissociation constants of the bisintercalating complexes of ΔΔ-[(dpq)₂Ru(phen-n-SOS-n-phen)Ru(dpq)₂]⁴⁺ (where n = 3, 4 or 5 and SOS =2-mercaptoethyl ether). *Chemical. Communication*, 1018-1019. (IF: 4.426)
18. Urathamakul, T.; Beck, J. L.; Sheil, M. M.; **Aldrich-Wright, J. R.**; Ralph, S. F. (2004) A mass spectrometric investigation of non-covalent interactions between ruthenium complexes and DNA, *Dalton Transactions.*, 2683-2690. (IF: 3.003)
19. Jaramillo, D., Liu, O., **Aldrich-Wright, J.** and Tor, Y. (2004) Synthesis of N-Methylpyrrole and N-Methylimidazole Amino Acids Suitable for Solid-Phase Synthesis, *Journal of Organic Chemistry*, **69**, 8151-8153. (IF: 3.675)
20. Gupta, R; Beck, J. L.; Ralph, S. F.; Sheil, M. M.; **Aldrich-Wright, J. R.** (2004) Comparison of the binding stoichiometries of positively charged DNA-Binding drugs using positive and negative ion electrospray ionization mass spectrometry, *Journal of the American Society of Mass Spectrometry*, **15**, 1382-139. (IF: 3.625)
21. Jaramillo, D., Buck, D. J., Collins, J. G., Fenton, R. R., Stootman, F. H., Wheate, N. J. and **Aldrich-Wright, J. R.** (2006) Synthesis, characterisation and biological activity of chiral platinum(II) complexes, *European Journal of Inorganic Chemistry*, 839–849. (IF: 2.514)
22. Jaramillo, D, Wheate, N. J., Ralph, S. F., Howard, W. A., Tor, Y and **Aldrich-Wright, J. R.** (2006) Polyamide platinum anticancer complexes designed to target specific DNA sequences, *Inorganic Chemistry*, **45**, 6004-6013. (IF: 3.851)
23. Brodie, C. R., Turner, P., Wheate, N. J. and **Aldrich-Wright, J. R.** (2006) (4,7-dimethyl-1,10-phenanthroline)(ethylenediamine)platinum(II) dichloride tris(deuterium oxide) solvate, *Acta Crystallographica Section E*, E62, m3137-m3139. (IF: 0.581)
24. Stootman, F. H., Fisher, D. M., Rodger, A. and **Aldrich-Wright, J. R.** (2006) Improved curve fitting procedures to determine equilibrium binding constants, *The Analyst*, **131**, 1145-1151. (IF: 2.858)
25. Jaramillo, D., Junk, P. C., Brodie, C. R., and **Aldrich-Wright, J. R.** (2006) Chloro(dimethyl sulfoxide-kS)[(1R,3S)-1,2,2,-trimethylcyclopentane-1,3-diamine-k2N,N']platinum(II) trichloro(dimethyl sulfoxide-kS)platinum(II), *Acta Crystallographica Section E*, E62, m3377-m3379. (IF: 0.581)
26. Yousouf, S. J., Brodie, C. R., Wheate, N. J. and **Aldrich-Wright, J. R.** (2007) Synthesis of a heteronuclear ruthenium(II)-platinum(II) complex linked by L-cysteine methyl ester, *Polyhedron*, **26**, 318-328. (IF: 1.958)
27. Taleb, R. I., Jaramillo, D., Wheate, N. J. and **Aldrich-Wright, J. R.** (2007) Synthesis of DNA-sequence-selective hairpin polyamide platinum complexes, *Chemistry - A European Journal*, **13**, 3177-3186. (IF: 4.907)
28. Still, B., Anil Kumar, P. G., **Aldrich-Wright, J. R.** and Price, W. S. (2007) ¹⁹⁵Pt NMR—theory and application, *Chemical Society Reviews*, **36**, 665-686. (IF: 13.747)

29. Kemp, S., Wheate, N. J., Stootman, F. H. and **Aldrich-Wright, J. R.** (2007) The host-guest chemistry of proflavine with cucurbit[6,7,8]urils, *Supramolecular Chemistry*, **19**, 475 - 484. (IF: 1.861)
30. Fisher, D. M., Bedarski, P. J., Grunert, R., Turner, P., Fenton, R. R. **Aldrich-Wright, J. R.** (2007) Chiral platinum(II) metallointercalators with potent in vitro cytotoxicity activity, *ChemMedChem*, **2**, 488-495. (IF: 4.904)
31. Wheate, N.J., Brodie, C. R., Collins, J. G., Kemp, S. and **Aldrich-Wright, J. R.** (2007) DNA intercalators in cancer therapy: Organic and inorganic drugs and their spectroscopic tools of analysis, *Mini Reviews in Medicinal Chemistry*, **7**, 627-648. (IF: n/a)
32. **Aldrich-Wright, J. R.**, Fenton, R. R., Leverett, P., Stephens, F. S., Williams, P. A., Vagg, R. S. (2007) The synthesis and structural analysis of *cis*- β -{[1,6-di(2'-pyridyl)-2,5-dibenzyl-2,5-diazahexane](1,2-benzoquinone diimine)}ruthenium(II)} and related complexes, *Journal of Coordination Chemistry*, **60**, 2015-2034 (IF: 1.003)
33. Kemp, S., Wheate, N.J., Buck, D.P., Nikac, M., Collins, J.G., **Aldrich-Wright, J. R.**, (2007) The effect of ancillary ligand chirality and phenanthroline functional group substitution on the cytotoxicity of platinum-based metallointercalators. *Journal of Inorganic Biochemistry*. **101**, 1049-1058. (IF: 2.423)
34. Wheate, N. J., Taleb, R. I. Krause-Heuer, A. M., Cook, R. L., Wang, S., Higgins, V. J. and **Aldrich-Wright, J. R.** (2007) Novel platinum(II)-based anticancer complexes and molecular hosts as their drug delivery vehicles, *Journal of the Chemical Society, Dalton Transactions, Invited paper*, 5055-5064. (IF: 3.003)
35. Kemp, S., Wheate, N.J., Wang, S., Collins, J. G., Ralph, S. F., Day A. I., Higgins, V. J. and **Aldrich-Wright, J. R.** (2007) Encapsulation of platinum(II)-based DNA intercalators within cucurbit[6,7,8]urils. *Journal of Biological Inorganic Chemistry* **12**, 969-979 (IF: 3.224)
36. Brodie, C. R. and **Aldrich-Wright, J. R.** (2007) Synthesis of flexible bisintercalating ruthenium(II) complexes, *European Journal. Inorganic. Chemistry* 4781-4783. (IF: 2.514)
37. Wheate, N. J., Kumar, P. G. A., Torres, A. M., **Aldrich-Wright, J. R.** and Price, W. S. (2008) Examination of Cucurbit[7]uril and Its Host-Guest Complexes by Diffusion Nuclear Magnetic Resonance. *Journal of Physical Chemistry B*, **112**, 2311-2314. (IF: 3.265)
38. Talib, J., Green, C., Davis, K. J., Urathamakul, T., Beck, J. L., **Aldrich-Wright, J. R.** and Ralph, S. F. (2008) A comparison of the binding of metal complexes to duplex and quadruplex DNA *Dalton Transactions*, 1018-1026. (IF: 3.003)
39. Kemp, S., Pisani, M., Wheate, N.J. and **Aldrich-Wright, J.R.** (2008) Degradation of bidentate coordinated platinum(II)-based DNA intercalators by reduced L-glutathione. *Journal of Medicinal Chemistry* **51**, 2787-2794. (IF: 4.097)
40. Amon, M.A, Ali, M., Bender, V., Hall, K., Aguilar, M-I., **Aldrich-Wright, J. R.**, Manolios, N., (2008) Kinetic and conformational properties of a novel T-cell antigen receptor transmembrane peptide in model membranes, *Journal of Peptide Science* **14**, 714-724. (IF: 1.801)
41. Urathamakul, T.; Waller, D. J.; Beck, J. L; Aldrich-Wright. J. R.; Ralph, S. R. (2008) A Comparison of Mass Spectrometry and other Techniques for Probing Interactions Between Metal Complexes and DNA. *Inorganic Chemistry*, **47**, 6621-6632 (IF: 3.911)
42. Krause-Heuer, A.; Wheate, N.; Tilby, M.; Pearson, D.; Ottley, C.; **Aldrich-Wright, J.R.** (2008) Substituted β -cyclodextrin and calix[4]arene as encapsulatory vehicles for platinum(II)-based DNA intercalator. *Inorganic Chemistry*. (2008), **47**, 6880-6888. (IF: 3.911)
43. Krause-Heuer, A. M.; Grant, M. P.; Orkey, N.; Aldrich-Wright, J. R. (2008) Drug delivery devices and targeting agents for platinum(II) anticancer complexes, *Australian Journal of Chemistry. Invited paper* 61, 675-681 (IF:1.895)
44. van Holst, M, Le Pevelen, **D. Aldrich-Wright, J.R.** (2008) Terpyridineplatinum(II) Incorporation in Sequence Selective Polyamides by Solid Phase Techniques, *European Journal of Inorganic Chemistry* **29**, 4608-4615. (IF: 2.514)
45. Fisher, D. M.; Fenton, R. R.; **Aldrich-Wright, J.R.** (2008) *In vivo* studies of a platinum(II) metallointercalator. *Chemical Communications*, **43**, 5613-5615. (IF: 4.426)
46. Wang, S.; Wright, E.P.; **Aldrich-Wright J.R.**; Higgins, V.J. (2008) A novel platinum anticancer drug modulates distinct transcriptional and cellular responses compared to cisplatin in *Saccharomyces cerevisiae*. *The Proceedings of Australian Society for Biochemistry and Molecular Biology*, **40**, 97. (IF: N/A)
47. Grant, M.P.; Wheate, N.J.; **Aldrich-Wright, J. R.** (2008) Diffusion coefficient of cucurbit[n]urils (n = 6 or 7) at various concentrations, temperatures and pH. *Journal of Chemical & Engineering Data*. DOI: 10.1021/je800347u (IF: 1.518)
48. Talib, J.; Harman, D.G.; Dillon, C.T.; Aldrich-Wright, J.; Beck, J.L.; Ralph, S.F. (2009) Does the metal influence non-covalent binding of complexes to DNA? *Dalton Transactions*, 504-513. (IF: 3.003)

49. Pisani, M. J.; Wheate, N. J.; Keene, R. F.; **Aldrich-Wright, J. R.**; Collins, J. G. (2009) Anionic PAMAM dendrimers as drug delivery vehicles for transition metal-based anticancer drugs. *Journal of Inorganic Biochemistry*. 10.1016/j.jinorgbio.2008.11.014 (IF: 3.911)
50. Krause-Heuer, Anwen M.; Wheate, N. J.; Price, W. S.; **Aldrich-Wright, J. R.** (2009) Diffusion-based studies on the self-stacking and nanorod formation of platinum(II) intercalators. *Chemical Communications*, DOI: 10.1039/b820584a. (IF: 4.426)
51. Jones, D.; van Holst, M.; Yano, S.; Tanase, T.; **Aldrich-Wright, J. R.** (2009) *N*-Glycoside complexes of nickel(II); probing carbohydrate/transition metal interactions *Australian Journal of Chemistry*. **62** 265-268 (IF:1.895)
52. Miyoshi, E.; Leverett, P.; Price, W. S.; Aldrich-Wright, J. R. (2008) 4,7-Dicarboxy-1,10-phenanthroline nitrate hydrate, *Acta Cryst. Section in prep* XXXXXX. (IF: 0.581)

Published Conference Abstracts

1. Aldrich-Wright, J. R. Wheate, N. J., Taleb, R. I. (2007) Novel Platinum(II)-Based anticancer drugs; metallointercalators and DNA sequence selective agents, *J. Biol. Inorg. Chem.*, 12 (Suppl 1), S16. (IF: 3.303)
2. van Holst, M. Brodie, C.R., Wheate, N. J. Aldrich-Wright, J. R., Platinum metallointercalators in solid phase synthesis, *J. Biol. Inorg. Chem.*, 12 (Suppl 1), S23. (IF: 3.303)
3. Krause-Heuer, A. M. Wheate, N. J. Aldrich-Wright, J. R., Use of molecular hosts in the drug delivery of platinum(II)-based DNA intercalating agents, *J. Biol. Inorg. Chem.*, 12 (Suppl 1), S23. (IF: 3.303)
4. Wright, E. P., Aldrich-Wright, J. R., Wheate, N. J. Dawes. I. W. Higgins, V. J. (2007) Molecular mechanisms involved in the *Saccharomyces cerevisiae* response to the novel anticancer compounds 56MESS, *J. Biol. Inorg. Chem.*, 12 (Suppl 1), S51. (IF: 3.303)
5. Wright, E., Aldrich-Wright, J.R., Wheate, N.J., Dawes, I.W. and Higgins, V.J. (2007) The use of *Saccharomyces cerevisiae* deletion mutant library to elucidate the molecular mechanisms involved in the eukaryote response to the novel platinum anticancer compound 56MESS. *Yeast* 24:S139. (IF 2.3)
6. Wang, S., Cook, R.L., Aldrich-Wright, J.R., and Higgins, V.J. (2007) Structure-cytotoxicity relationships of novel platinum anticancer drugs in cancer cells and *Saccharomyces cerevisiae*. *Yeast* 24:S155. (IF 2.3)

Student Publications

1. Orkey, N. (2007) Aptamers: Molecular Binding Agents with Application in Targeted Cancer Treatment, *Australian Journal of Chemistry*. **60**, 696 (IF:1.895)
2. Harrison, R, (2008) Confocal Microscopy: Exploring the Cellular Uptake and Distribution of Fluorescent Metal-Based Drugs *Australian Journal of Chemistry*.