

Curriculum Vitae

Prof Tim St Pierre

Personal Details

Family Name	St. Pierre
Given names	Timothy Guy

Qualifications

BSc (Hons)	1983	The University of Liverpool, U.K.
PhD	1986	The University of Liverpool, U.K.

Awards

Australian Academy of Technological Sciences and Engineering – Clunies-Ross Award 2010
IEEE Magnetics Society - Distinguished Lecturer 2014
Thalassaemia International Federation - Panos Englezos Prize 2016

Career History

Current Appointment	2002 -	Professor, School of Physics, The University of Western Australia Chief Scientific Officer, Resonance Health Ltd
Previous Appointments	1997-2002	Senior Lecturer, School of Physics, The University of Western Australia
	1995-1997	Lecturer, School of Physics, The University of Western Australia
	1993-1995	ARC Senior Research Associate, Murdoch University
	1991-1993	Cooley's Anemia Foundation (New York) Research Fellow, Murdoch University
	1989-1991	ARC Research Associate, Murdoch University
	1987-1988	Murdoch University/CSIRO Postdoctoral Research Fellowship

Areas of Research Focus

Magnetic resonance imaging, pathological mineralisation of iron, iron overload diseases, thalassaemia, hereditary hemochromatosis, liver disease, biomagnetism, biomagnetic materials, magnetic nanoparticles, biomagnetic technologies.

Patents

Have international patents based on the following two families of patent;

- Clark, P.R. and St. Pierre, T.G. (United States Patent US6605943) Method of mapping proton transverse relaxation time constants or functions thereof in a target subject to localised movement using nuclear magnetic resonance imaging.
- St. Pierre, T.G. and Clark, P.R. (United States Patent US2004222792) Method of estimating the spatial variation of magnetic resonance imaging radiofrequency (RF) signal intensities within an object from the measured intensities in a uniform spin density medium surrounding the object

These patents underpin the FerriScan® technology owned and commercialised by Resonance Health Analysis Services Pty Ltd.

- St. Pierre, T.G., House, M.J., and Bangma, S. (Australian Provisional Patent 2011905116 and PCT application PCT/AU2012/001510) Method and Apparatus for Estimating Fat.

This patent underpins technology (HepaFat Scan®) currently being commercialised by Resonance Health Analysis Services Pty Ltd.

- St. Pierre, T.G., Woodward, R., Candido, R.R.F. (Australian Provisional Patent 2016903730) Magnetic Tool and Method of Collecting Magnetic Particles Using Same.

This patent underpins a technology for improved diagnosis of schistosomiasis.

Publications (Prof T.G. St. Pierre)

(a) Refereed Publications

2017

Ho, P.J., Tay, L., Teo, J., Marlton, P., Grigg, A., St Pierre, T., Brown, G., Badcock, C.-A., Traficante, R., Gervasio, O.L., and Bowden, D.K. (2017) Cardiac iron load and function in transfused patients treated with deferasirox (the MILE study). *Eur. J. Haematol.* 98, 97-105.

Kirk P., Sheppard M., Carpenter J.-P., Anderson L., He T., St Pierre T., Galanello R., Catani G., Wood J., Fucharoen S., Porter J.B., Walker J.M., Forni G.L., Pennell D.J. (2017) Post-mortem study of the association between cardiac iron and fibrosis in transfusion dependent anaemia. *Journal of Cardiovascular Magnetic Resonance* 19: 36.

Favero V., Frasca Candido R.R., De Marco Verissimo C., Jones M.K., St. Pierre T.G., Lindholz C.G., Da Silva V.D., Morassutti A.L., Graeff-Teixeira C. (2017) Optimization of the Helmintex method for schistosomiasis diagnosis. *Experimental Parasitology* 177: 28-34.

2016

St. Pierre, T.G., House, M.J., Bangma, S.J., Pang, W., Bathgate, A., Gan, E.K., Ayonrinde, O.T., Bhathal, P.S., Clouston, A., Olynyk, J.K., and Adams, L.A. (2016) Stereological Analysis of Liver Biopsy Histology Sections as a Reference Standard for Validating Non-Invasive Liver Fat Fraction Measurements by MRI. *PLoS ONE* 11(8): e0160789. doi:10.1371/journal.pone.0160789

Rahn, H., Woodward, R., House, M., Engineer, D., Feindel, K., Silvio Dutz, S., Odenbach, S., St Pierre, T. (2016) Calibration standard of body tissue with magnetic nanocomposites for MRI and X-ray imaging. *J Magn Magn Mat* 405, 78-87.

Singh R., Norret, M., House, M.J., Galabura, Y., Bradshaw, M., Ho, D., Woodward, R.C., St. Pierre, T., Luzinov, I., Smith, N.M., Lim, L.Y., and Iyer, K.S. (2016) Dose Dependent Therapeutic Distinction between Active and Passive Targeting Revealed Using Transferrin Coated PGMA Nanoparticles. *Small* 12, 351-359.

Quinn, C.T. and St. Pierre, T.G. (2016) MRI Measurements of Iron Load in Transfusion-Dependent Patients: Implementation, Challenges, and Pitfalls. *Pediatric Blood and Cancer* 63, 773-780.

Agarwal V., Ho D., Ho D., Galabura Y., Yasin F., Gong P., Ye W., Singh R., Munshi A., Saunders M., Woodward R.C., St. Pierre T., Wood F.M., Fear M., Lorensen D., Sampson D.D., Zdyrko B., Luzinov I., Smith N.M., Iyer K.S. (2016) Functional Reactive Polymer Electrospun Matrix. *ACS Applied Materials & Interfaces* 8: 4934-4939.

2015

Gutiérrez, L., House, M.J., Vasavda, N., Drašar, E., Gonzalez-Gascon y Marin I., Kulasekararaj, A.G., St Pierre, T.G., Thein S.L. (2015) Tissue Iron Distribution Assessed by MRI in Patients with Iron Loading Anemias. PLoS ONE 10: e0139220.

Wood J.C., Pressel S., Rogers Z.R., Odame I., Kwiatkowski J.L., Lee M.T., Owen W.C., Cohen A.R., St. Pierre T., Heeney M.M., Schultz W.H., Davis B.R., and Ware R.E. (2015) Liver iron concentration measurements by MRI in chronically transfused children with sickle cell anemia: baseline results from the TWiTCH trial. American Journal of Hematology 90: 806-810.

Karl, S., Laman, M., Moore, B.R., Benjamin, J., Koleala, T., Ibam, C., Kaisan, B., Siba, P.M., Waltmann, A., Mueller, I., Woodward, R.C., St Pierre, T.G., and Davis T.M.E. (2015) Gametocyte clearance kinetics determined by quantitative magnetic fractionation in Melanesian children with uncomplicated malaria treated with artemisinin combination therapy. Antimicrobial agents and chemotherapy 59:4489–4496: DOI: 10.1128/AAC.00136-15

Bradshaw M., Clemons T., Ho D., Gutierrez L., Lazaro F., House M., St Pierre T.G., Fear M., Wood F., Iyer S. (2015) Manipulating Directional Cell Motility Using Intracellular Superparamagnetic Nanoparticles. Nanoscale 7, 4884.

Karl, S., Mueller I., and St. Pierre, T.G. (2015) Considerations regarding the micromagnetic resonance relaxometry technique for rapid label-free malaria diagnosis. Nature Medicine 21, 1387-1387.

Candido, R.R.F., Favero, V., Duke, M., Karl, S., Gutiérrez, L., Woodward, R.C., Graeff-Teixeira, C., Jones, M.K., and St. Pierre, T.G. (2015) The affinity of magnetic microspheres for *Schistosoma* eggs. International Journal for Parasitology 45: 43–50.

Jones, E., Pasricha, S.-R., Allen, A., Evans, P., Fisher, C.A., Wray, K., Premawardhena, A., Bandara, D., Perera, A., Webster, C., Sturges, P., Olivieri, N.F., St. Pierre, T., Armitage, A.E., Porter, J.B., Weatherall, D.J., Drakesmith, H. (2015) Hcpidin is suppressed by erythropoiesis in hemoglobin E β -thalassemia and β -thalassemia trait. Blood 125: 873-880.

Adams L.A., Crawford D.H., Stewart K., House M., St. Pierre T., Webb M., Ching H., Kava J., Bynevelt M., MacQuillan G.M., Garas G., Ayonrinde O.T., Mori T.A., Niu X., Jeffrey G.P., Olynyk J.K. (2015) The impact of phlebotomy in nonalcoholic fatty liver disease: A prospective randomized controlled trial. Hepatology 61:1555-1564.

House, M.J., Bangma, S.J., Thomas, M., Gan, E.K., Ayonrinde, O.T., Adams, L.A., Olynyk, J.K., St. Pierre, T.G. (2015) Texture-based classification of liver fibrosis using magnetic resonance imaging. J. Magn. Reson. Imag. 41: 322-328.

2014

Weis, C., Blank, F., West, A., Black, G., Woodward, R., Carroll, M., Kartmann, R., Hallam, E., Shaw, J., Murphy, J., Teoh, W.Y., Aifantis, K., Amal, R., House, M., St Pierre, T., Fabry, B. (2014) Labeling of cancer cells with magnetic nanoparticles for magnetic resonance imaging. Magnetic Resonance in Medicine, 71:1896–1905.

Challenor, M., Gong, P., Lorensen, D., Michael J. House, M.J., Woodward, R.C., St. Pierre, T., Fitzgerald, M., Dunlop, S.A., Sampson, D.D., and Iyer, K.S. (2014) The influence of

NaYF₄:Yb,Er size/phase on the multimodality of co-encapsulated magnetic photon-upconverting polymeric nanoparticles. *Dalton Trans.*, 43, 16780–16787.

Carpenter, J.-P., He, T., Kirk, P., Roughton, M., Anderson, L.J., de Noronha, S.V., Baksi, A.J., Sheppard, M.N., Porter, J.B., Walker, J.M., Wood, J.C., Forni, G., Catani, G., Matta, G., Fucharoen, S., Fleming, A., House, M., Black, G., Firmin, D.N., St. Pierre, T.G., and Pennell, D.J. (2014) Calibration of myocardial T2 and T1 against iron concentration. *Journal of Cardiovascular Magnetic Resonance*, 16:62 (12 pages)

Karl, S., Laman, M., Koleala, T., Ibam, C., Kasian, B., N'Drewei, N., Rosanas-Urgell, A., Moore, B.R., Waltmann, A., Koepfli, C., Siba, P.M., Betuela, I., Woodward, R.C., St.Pierre, T.G., Mueller, I., and Davis, T.M.E. (2014) Comparison of three methods for detection of gametocytes in Melanesian children treated for uncomplicated malaria. *Malaria Journal* 13:319 (8 pages).

House, M.J., Fleming, A.J., de Jonge, M.D., Paterson, D., Howard, D.L., Carpenter, J.-P., Pennell, D.J., and St Pierre, T.G. (2014) Mapping iron in human heart tissue with synchrotron x-ray fluorescence microscopy and cardiovascular magnetic resonance. *J. Cardiovascular Magn. Reson.* 16:80 (8 pages)

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Beshlawy A, Tagui M, Hamdy M, Ghamrawy M, Azim K, Salem D, Said F, Samir A, St Pierre T, Pennell D (2014) Low prevalence of cardiac siderosis in heavily iron loaded Egyptian thalassemia major patients. *Ann. Hematol.* 93, 375-379.

St. Pierre, T.G., El-Beshlawy, A., Elalfy, M., Al Jefri, A., Al Zir, K., Daar, S., Habr, D., Kriemler-Krahn, U., and Taher, A. (2014) Multicenter validation of spin-density projection-assisted R2-MRI for the noninvasive measurement of liver iron concentration. *Magn. Reson. Med.*, 71:2215–2223.

2013

Bleul, R., Thiermann, R., Marten, G. U., House, M. J., St. Pierre, T. G., Hafeli, U. O., and Maskos, M. (2013) Continuously manufactured magnetic polymersomes - a versatile tool (not only) for targeted cancer therapy. *Nanoscale* 5, 11385-11393.

Ho, D., Peerzade, A.M.A., Becker, T., Hodgetts, S., Harvey, A., Plant, G.W., Woodward, R.C., Luzinov, I., St. Pierre, T.G., and Iyer, K.S. (2013) Magnetic Field Directed Fabrication of Conducting Polymer Nanowires. *Chem. Commun.*, 49, 7138 - 7140.

Karl, S., Gutierrez, L., Lucyk-Maurer, R., Kerr, R., Candido, R.R.F., Toh, S.Q., Saunders, M., Shaw, J.A., Suvorova, A., Hofmann, A., House, M.J., Woodward, R.C., Graeff-Teixera, C., St. Pierre, T.G., Jones, M.K. (2013) The iron distribution and magnetic properties of schistosome eggshells: implications for improved diagnostics. *PLoS Negl Trop Dis* 7(5): e2219. doi:10.1371/journal.pntd.0002219

House, M.J., Gan, E.K., Adams, L.A., Ayonrinde, O.T., Bangma, S.J., Bhathal, P.S., Olynyk, J.K., and St. Pierre, T.G. (2013) Diagnostic performance of a rapid magnetic resonance imaging method of measuring hepatic steatosis. *PLoS ONE* 8(3): e59287. doi:10.1371/journal.pone.0059287

Saville, S.L., Woodward, R.C., House, M.J., Tokarev, A., Hammers, J., Qi, B., Shaw, J., Saunders, M., Varsani, R.R., St. Pierre, T.G. and Mefford, O.T. (2013) The effect of magnetically induced linear aggregates on proton transverse relaxation rates of aqueous suspensions of polymer coated magnetic nanoparticles. *Nanoscale*, 5, 2152–2163.

Ibrahim, M., Wee. L., House, M.J., Woodward, R.C., Saunders, M., Murphy, J., and St. Pierre, T.G. (2013) Enhancement of the Cell Specific Proton Relaxivities of Human Red Blood Cells via Loading with Gadoteric Acid. *IEEE Transactions on Magnetics*, 49, 414-420.

2012

Whitnall, M., Rahmanto, Y.S., Huang, M.L.-H., Federica Saletta, Hiu Chuen Lok, Lucía Gutiérrez, Francisco J. Lázaro, Fleming, A.J., St. Pierre, T.G., Mikhael, M.R., Ponka, P. and Richardson, D.R. (2012) A mouse model of Friedreich's ataxia: Treatment by iron supplementation and identification of non-ferritin mitochondrial iron deposits. *Proc. Nat. Acad. Sci USA*, 109, 20590-20595.

Allen, A., Fisher, C., Premawardhena, A., Bandara, D., Perera, A., Allen, S., St. Pierre, T., Olivieri, N., Weatherall, D. (2012) Methemoglobinemia and ascorbate deficiency in hemoglobin E β thalassemia: metabolic and clinical implications. *Blood*, 120, 2939-2944.

Brown, G.C., Patton, W.N., Tapp, H.E., Taylor, D.J., and St Pierre, T.G. (2012) Spin-density-projection-assisted R2 magnetic resonance imaging of the liver in the management of body iron stores in patients receiving multiple red blood cell transfusions: an audit and retrospective study in South Australia. *Internal Medicine Journal*, 42, 990-996.

Vasavda, N., Gutiérrez, L., House, M.J., Drašar, E., St Pierre, T.G., Thein, S.L. (2012) Renal iron load in sickle cell disease is influenced by severity of haemolysis. *Br. J. Haematol.* 157:599-605.

Gurarie, D., Karl, S., Zimmerman, P.A., King, C.H., St. Pierre, T.G., and Davis, T.M.E. (2012) Mathematical modeling of malaria infection with innate and adaptive immunity in individuals and agent-based communities. *PLoS ONE* 7(3): e34040.

2011

Karl, S., Gutiérrez, L., House, M., Davis, T., St. Pierre, T. (2011) Nuclear Magnetic Resonance: A tool for malaria diagnosis? *Am. J. Trop. Medicine & Hygiene* 85, 815-817.

Carroll, M.R.J., Huffstetler, P.P., Miles, W.C., Goff, J.D., Davis, R.M., Riffle, J.S., House, M.J., Woodward, R.C., and St. Pierre, T.G. (2011) Effect of polymer coatings on proton transverse relaxivities of aqueous suspensions of magnetic nanoparticles. *Nanotechnology* 22, 325702 (7pp).

Karl, S., Gurarie, D., Zimmerman, P.A., King, C.H., St. Pierre, T.G., and Davis, T.M.E. (2011) A Sub-Microscopic Gametocyte Reservoir Can Sustain Malaria Transmission. *PLoS ONE* 6(6): e20805. doi:10.1371/journal.pone.0020805

Balasubramaniam, S., Pothayee, N., Lin, Y., House, M., Woodward, R., St. Pierre, T., Davis, R., and Riffle, J. (2011) Poly(N-isopropylacrylamide)-Coated Superparamagnetic Iron Oxide Nanoparticles: Relaxometric and Fluorescence Behavior Correlate to Temperature-dependent Aggregation. *Chem. Mater.*, 23, 3348–3356.

Carpenter, J.-P., He, T., Kirk, P., Roughton, M., Anderson, L.J., de Noronha, S.V., Sheppard, M.N., Porter, J.B., Walker, J.M., Wood, J.C., Galanello, R., Forni, G., Catani, G., Matta, G., Fucharoen, S., Fleming, A., House, M.J., Black, G., Firmin, D.N., St. Pierre, T.G., and Pennell, D.J. (2011) On T2* magnetic resonance and cardiac iron. *Circulation* 123, 1519-1528.

Pothayee, N., Balasubramaniam, S., Davis, R. M., Riffle, J. S., Carroll, M. R. J., Woodward R. C. and St. Pierre, T. G. (2011) Synthesis of 'Ready-to-Adsorb' Polymeric Nanoshells for Magnetic Iron Oxide Nanoparticles via Atom Transfer Radical Polymerization. *Polymer*, 52, 1356-1366.

Pavitt, H.L., Aydinok, Y., El-Beshlawy, A., Bayraktaroglu, S., Ibrahim, A.S., Hamdy, M.M., Pang, W., Sharples, C., and St Pierre, T.G. (2011) The effect of reducing repetition time TR on the measurement of liver R2 for the purpose of measuring liver iron concentration. *Magn. Reson. Med.* 65, 1346-1351.

Ferrari, P., Kulkarni, H., Dheda, S., Betti, S., Harrison, C., St. Pierre, T.G., and Olynyk, J.K. (2011) Serum iron markers are inadequate for guiding iron repletion in chronic kidney disease. *Clin. J. Am. Soc. Nephrol.* 6, 77-83.

Karl, S., Davis, T.M.E., and St. Pierre, T.G. (2011) Quantification of *Plasmodium falciparum* Gametocytes by Magnetic Fractionation. *Am. J. Trop. Med. Hyg.*, 84, 158-160.

2010

Scicluna, T.R., Fraser, B.H., Gorham, N.T., MacLellan, J.G., Massi, M., Skelton, B.W., St. Pierre, T.G., and Woodward, R.C. (2010) Di[2,6-bis(5-phenylpyrazol-3-yl)pyridine]Co(II): an old coordination mode for a novel supramolecular assembly. *CrystEngComm.*, 12: 3422-4.

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Afkhami, S., Tyler, A.J., Renardy, Y., Renardy, M., St. Pierre, T.G., Woodward, R.C., and Riffle, J.S. (2010) Deformation of a hydrophobic ferrofluid droplet suspended in a viscous medium under uniform magnetic fields. *J. Fluid Mech.*, 663, 358-384.

Karl, S., Davis, T.M.E., and St. Pierre, T.G. (2010) Parameterization of high magnetic field gradient fractionation columns for applications with *Plasmodium falciparum* infected human erythrocytes. *Malaria Journal* 9, 116 (9 pages).

Caba, B.L., Zhang, Q., Carroll, M.R., Woodward, R.C., St. Pierre, T.G., Gilbert, E.P., Riffle, J.S., and Davis, R.M. (2010) Nanostructure of PEO-polyurethane-PEO triblock copolymer micelles in water. *Journal of Colloid & Interface Science* 344, 81-89.

Carroll, M.R.J., Woodward, R.C., House, M.J., Teoh W.-Y., Amal, R., Hanley, T.L., and St. Pierre, T.G. (2010) Experimental validation of proton transverse relaxivity models for superparamagnetic nanoparticle MRI contrast agents. *Nanotechnology* 21, 035103.

Boyer, C., Priyanto, P., Davis, T.P., Pissuwan, D., Bulmus, V., Kavallaris, M., Teoh, W.-Y., Amal, R., Carroll, M., Woodward, R., and St Pierre, T. (2010) Anti-fouling magnetic nanoparticles for siRNA delivery. *J. Mater. Chem.*, 20, 255-265.

House, M.J., St. Pierre, T.G., Milward, E.A., Bruce, D.G., and Olynyk, J.K. (2010) Relationship between brain R2 and liver and serum iron concentrations in elderly men. *Mag. Reson. Med.* 63, 275-281.

2009

Karl, S., Wong, R.P.M., St. Pierre, T.G., and Davis, T.M.E. (2009) A comparative study of a flow-cytometry-based assessment of *in vitro Plasmodium falciparum* drug sensitivity. *Malaria J.* 8:294.

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Bovell, E.J., Buckley, C.E., Chua-anusorn, W., Cookson, D., Kirby, N., Saunders, M., and St Pierre, T.G. (2009) Dietary iron loaded rat liver haemosiderin and ferritin: in situ measurement of iron core nanoparticle size and cluster structure using anomalous small angle x-ray scattering. *Phys. Med. Biol.* 54, 1209-1221.

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2008

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Mefford, O.T., Carroll, M.R.J., Vadala, M.L., Goff, J.D., Mejia-Ariza, R., Saunders, M., Woodward, R.C., St. Pierre, T.G., Davis, R.M., Riffle, J.S. (2008) Size analysis of PDMS-magnetite nanoparticle complexes: experiment and theory. *Chem. Mater.*, 20, 2184-2191.

House, M.J., St. Pierre, T.G., and McLean, C. (2008) A 1.4T study of proton magnetic relaxation rates, iron concentrations and plaque burden in Alzheimer's disease and control post-mortem brain tissue. *Magnetic Resonance in Medicine*, 60, 41-52.

Gorham, N.T., St. Pierre, T.G., Chua-anusorn, W., and Parkinson, G.M. (2008) Magnetic energy-barrier distributions for ferrihydrite nanoparticles formed by reconstituting ferritin. *J. Appl. Phys.* 103, 054302.

2007

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Mefford, O.T., Woodward, R.C., Goff, J.D., Vadala, T.P., St. Pierre, T.G., Dailey, J.P., and Riffle, J.S. (2007) Field-induced motion of ferrofluids through immiscible viscous media: testbed for restorative treatment of retinal detachment, *J. Mag. Magn. Mat.*, 311, 347-353.

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2006

Rossi, E., Wallace, D.F., Subramaniam, V.N., St. Pierre, T.G., Mews, C., Jeffrey, G.P. (2006) Clinical expression of C282Y homozygous *HFE* haemochromatosis at 14 years of age. *Ann. Clin. Biochem.* 43, 233-236.

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2005

Harris, L.A., Riffle, J.S., and St. Pierre, T.G. (2005) Principles of design and synthesis of iron oxide magnetic nanoparticles for biomedical applications. *J. Aust. Ceramic Soc.*, 41, 23-42.

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