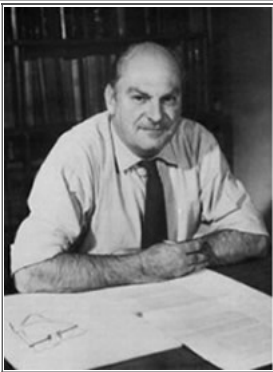
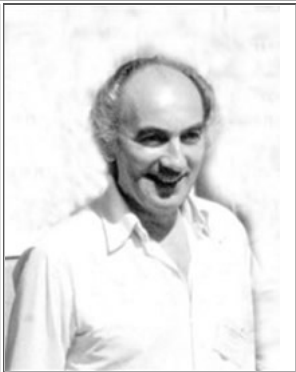


HOME	My Research Career Return to Main Science Page Return to My Research Page Our publications My general personal biography					
		Prof B C J G Knight. Head of Microbiology at Reading	Dr. Len Zatman, my PhD supervisor	Me on PhD Graduation day 1963	On giving me a Personal Chair in Biochemistry 1986	My retirement event with Elizabeth, my main research 'helper'. 2005
	Summary of early research Lab life in Southampton (1967-2005) My research students Research associates Photos of my research students My CV including overseas visits					

Summary of my early research (1960 - 1967)				A FEW NOTES		
My research started with my Undergraduate Tutor, PhD Supervisor, Colleague, Friend and Hero - Len . Zatman, in the Microbiology Department, Reading University (1957 – 1966). My PhD proect was to 'find' the enzyme responsible for the oxidation of methanol in bacteria able to grow on this substrate – special in having only a single carbon atom. Len thought it was likely to be unusual. He had worked previously on 'why does methanol cause blindness in humans'. He assumed it must be caused by the poisonous product of methanol oxidation (formaldehyde). But he found that no traditional alcohol dehydrogenase enzymes are able to oxidise methanol. At this time there were very few papers published on bacteria able to grow on methane or methanol. None was available to us so I started by isolating bacteria on methanol. They were all pink aerobic bacteria able to grow on other substrates as well as methanol. Microbes that are able to grow on compounds with only one carbon atom [C1-compounds] such as methane, methanol, methylamine etc are now called Methylootrophs, or a sub group Methanotrophs if they grow on methane. After one year Peter Large and J.R. Quayle in Krebs' Oxford lab published a paper describing exactly what I had done! But they could find no enzyme that oxidised methanol. Quayle then went on to become the 'Godfather' of methylotrophy. There were are two main questions: how do they get energy from their growth substrates, and how do they assimilate the carbon? We concentrated on the first question while Quayle discovered four completely new metabolic pathways, with many novel enzymes involved in carbon assimilation. It is now known that the methlotrophs span a huge range of organsims with widely different genetic make-ups and metabolism. All the earlier work on these microbes is described by me in The				My PhD was funded by a Reading University Research Scholarship (£300 p.a.). My post doc was funded to continue my PhD work by the Agriculture Research Council The funding for my research at Southampton University has been mainly from The University, The Government Science Research Councils, The Royal Society, ICI and The Wellcome Trust Other research topics in addition to methanol oxidation: I worked (1966-1967) for one year in Sheffield with John Guest on regulation of the anaerobic fermentaion of glucose and glutmate in <i>Clostridium tetanomorphum</i>. In my first years at Southampton I also worked on the regulation of transport of ammonia and amino acids into the mould <i>Aspergillus</i> (Jeff Robinson and Bob Cook). I also collaborated on Susan Hill's proect on aspects of micro-aerobic nitrogen fixation in bacteria (Andy Smith and Nic Juty).		

	Biochemistry of Methylotrophs (Anthony 1982); PDF and Quayle's contributions are summarised in my memoir published by the Royal Society Memoir (provided in full here). After one year I discovered the enzyme responsible for the first step in the oxidation of methanol (methanol dehydrogenase MDH), showing it to be a new type of enzyme having a completely novel prosthetic group. The study of this was the subject of my 3 year post-doc with Len. Thirteen years later it was shown to be a novel compound called called PyrroloQuinoline Quinone [PQQ]; it was the first of a whole new family of enzymes called quinoproteins. My main research line after moving as a lecturer to the University of Southampton was to investigate quinoproteins in general, and how energy in the form of ATP is produced by novel electron transport pathways.	We also worked on electron transport systems for oxidation of methylamine (Ashley Lawton and Kevin Auton). I should emphasise that after 1967 when I say I discovered things this usually refers to work by a few post docs and many excellent research students (listed below) I was fortunate that there were two series of International Symposia, held every 2 or 3 years on 'my topics'. I attended almost all of these, usually giving a presentation: Symposia on Microbial Growth on C1 Compounds Symposia on PQQ and Quinoproteins Many of these are on a page on this website
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	Life in Southampton 1967 -2005			
	My research students by date	My research students (alphabetical)	Post docs, visitors and Research Colleagues	
	Dunstan, Pat M. 1972 * Robinson, Jeff H. 1973 Taylor, Ian, J. 1976 Pearce, Cedric 1976 Cook, Rob, J. 1978 O'Keefe, Dave T. 1978 Bolbot, .A. 1980 Cross, A.R. 1980 Beardmore-Gray, Matt 1982 Froud, Steve J. 1984 Ford, Steve 1985 Page, M. Dudley 1985 Lawton, S. Ashley 1985 Elliott, E. Jim 1987 Smith, Andy 1988 Ashcroft, Helen c1988 Auton, Kevin A. 1989 Day, Darren, J. 1990 Long, Tony R. 1991 Chan H.T. Claude 1992 Cox, Jon, M. 1992 Richardson, Ian W. 1992 Avezoux, Alain 1995 Cozier, Giles, E. 1995	Afolabi, P.R. 2001 remi Amaratunga, Karen 1997 Ashcroft, Helen c1988 Auton, Kevin A. 1989 Avezoux, Alain 1995 Beardmore-Gray, Matt 1982 Bolbot, .A. 1980 Chan H.T. Claude 1992 Cook, Rob, J. 1978 Cox, Jon, M. 1992 Cozier, Giles, E. 1995 Cross, A.R. 1980 Dales, Simon L. 1995 Day, Darren, J. 1990 Dunstan, Pat M. 1972 * Elliott, E. Jim 1987 Ford, Steve 1985 Froud, Steve J. 1984 James, Peter L. 2003 Juty, Nick S. 1997 Lawton, S. Ashley 1985 Long, Tony R. 1991 Majekodunmi, O. 2001 tosin O'Keefe, Dave T. 1978	[Widdowson, Dave 1975 postdoc] [Keevil, Bill C.W. 1979 postdoc] [Netrusov, Sasha I.A. postdoc] [Nunn, David N. 1988] [Goodwin, Matt G. 1996 postdoc] [Toyama, Hiro 1998 visitor] [Salleh, Raff A. 1999 medic undergrad] [Felton, Leigh M. 2005] Babel, Wolfgang 1980ish Meenakshi Ghosh Susan Hill Paul Skipp	

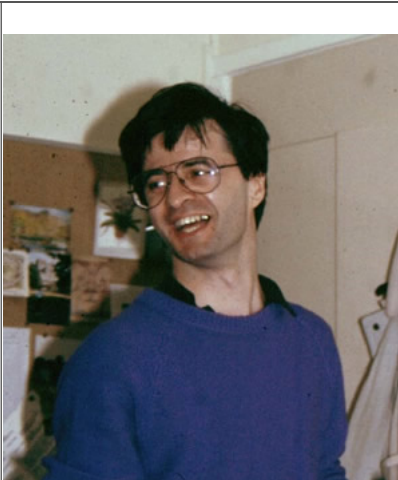
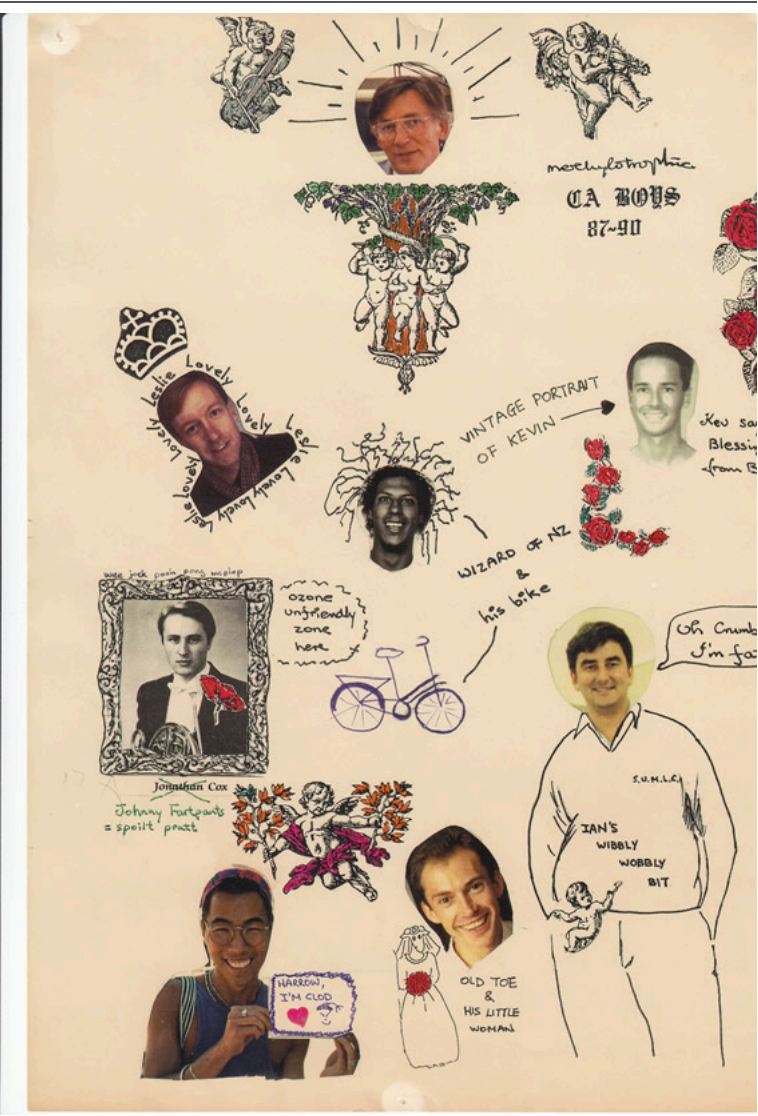
	Dales, Simon L. 1995 Amaratunga, Karen 1997 Juty, Nick S. 1997 Reid, J. 1998 Afolabi, P.R. 2001 remi Majekodunmi, O. 2001 tosin James, Peter L. 2003 Williams, Paul A. 2005	Page, M. Dudley 1985 Pearce, Cedric 1976 Reid, J. 1998 Richardson, Ian W. 1992 Robinson, Jeff H. 1973 Smith, Andy 1988 Taylor, Ian, J. 1976 Williams, Paul A. 2005	
	NB I was really just the microbiology advisor to Cedric Pearce who was a student of Prof. M. Akhtar		
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PICTURES OF A FEW OF MY RESEARCH STUDENTS I am sorry I do not have a complete set

There are many more pictures of other scientists working on methylotrophs on one of my [methylotroph presentations](#)

				
David Smith (right) who helped me enormously, doing his PhD at the same time. Picture was when we were undergraduates.	Jeff Robinson [my first student with Pat Dunstan]	Matt Bearmore-Gray with Pat	Ashley Lawton	Kevin Auton

									
Andy Smith		Darren Day		Tony Long		Claude Chan		Jon Cox	

			
Ian Richardson	Alain Avezoux	Gyles Cozier	
			
Simon Dales	Karen Amaratunga		Claude Chan deserves a special mention. I was his undergraduate tutor, then his PhD supervisor then he stayed another 3 years doing a post-doc. Besides being excellent in all this he was the social centre of a wonderful lab. Above: a typical Claude Chan production

				
TOP Nic Juty	Tosin Majekodunmi	Peter James		

..... Some group photos. These were often taken at parties organised by Claude Chan and driven by the energy of Darren Day

		
Kare, Jon, Darren, Claude and Ian.	Me, Claude, Jon and Ian	Jon, Darren and Claude

					
Nic, Simon, Paul Skipp, Me, Tosin Matt, Karen & Alain		Same without me.		Alain, Jon, Ian, Liu, Simon, Clive (my older son), Me and Claude with experimental hair	
					
Hugh (younger son), Claude, Ian and Simon		Jon, Darren, Ian and Claude		Same	
					
Me and Darren	Darren and Jon	Claude			

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.....	Brief CV from official University CV just before retirement	NOTE: Our publications are on a separate page (Click here)
	Brief curriculum vitae of Professor Chris Anthony BSc, PhD, DSc University of Southampton Date of birth: 27th June 1939; Watford, Herts, UK Brief summary of career: 1957- 1960: BSc course in Microbiology, University of Reading 1960-1963: PhD in Microbial Biochemistry, University of Reading 1963-1966: Postdoctoral Fellow, University of Reading 1966-1967: Postdoctoral Fellow, University of Sheffield 1967-1986: Lecturer, Senior Lecturer, Reader, University of Southampton 1986-2005: Professor of Biochemistry, University of Southampton Present post: Emeritus Professor in Centre for Biological Sciences, School of Biological Sciences, Faculty of Natural and Environmental Sciences, University of Southampton. Qualifications: BSc Microbiology 1960; University of Reading PhD Microbial Biochemistry 1963 University of Reading DSc Microbial Biochemistry 1984 University of Reading Publications: About 150 books, reviews and research papers. Research interests: The biochemistry of methylotrophs. Active transport of amino acids and ammonia in <i>Aspergillus</i>. Respiratory protection in nitrogen fixation. Bacterial energy transduction. PQQ and quinoproteins. Cytochrome structure and function. Biotechnology. PhD students supervised: 32	External Committees: Science and Engineering Research Council (UK) (SERC) Plant Sciences and Microbiology Sub Committee (1980 _1983); Biochemical Society; Bioenergetics committee (1986- 1990); SERC Postdoctoral Fellowship Allocation Committee (1980); SERC Biological Sciences Committee (1988 -1991); SERC CASE studentship allocation committee (1990, 1991; Chairman); SERC Biological Sciences Education and Training Panel (Chairman; 1991-1994) Editorial work: Editorial adviser for Biochem. J (1982 - 2005); Editor for Biochim. Biophys. Acta (1986-present); Referee for: J. Gen. Microbiol; Biochem. J; Biochim. Biophys. Acta; Archives for Microbiology, Molecular Microbiology, J. Bacteriol. European Journal of Biochemistry; Archives Chemistry and Biophysics, Biochemistry, Journal of Biological Chemistry.. University of Southampton: Deputy Chairman, School of Biochemical and Physiological Sciences (1987-1990); Director of Inst. Biomolecular Sciences (1991-1995); Research co-ordinator of SERC Molecular Recognition Centre (1988-1995); Head of Department of Biochemistry (1993-1996).
	Major International conferences attended as invited lecturer 1985: Int. Symp. and on biomembranes, Madurai, India. 1986: 5th Int. Symposium on Microbial Growth on C₁ Compounds (Groningen) 1986: Soc. Gen. Microbiol: Symp. on Carbon substrates in Biotechnology (Durham) 1988: Int. Symposium on PQQ and Quinoproteins (plenary lecturer) (Delft) 1987: Int. Symposium on Biochemistry for Development (Karachi) 1987: Lecturer in Atomic Res. Centre, Bombay and Microbiology Dept. Goa. 1988: Int. Congress of Biochemistry (Prague) 1989: FEBS Meeting (Rome) 1989: Amer. Soc. Microbiol. Ann. Symposium. (New Orleans) 1989: Soc. General Microbiology Symposium (Cambridge) 1989: 6th Int. Symposium on Microbial Growth on C₁ Compounds (Gottingen) 1990: Bioscience 90 (Malmo) 1991: 2nd International Symposium on PQQ and Quinoproteins (Yamaguchi, Japan; Main Plenary lecturer) 1992: Gordon Conference on PQQ (Andover, USA) (Chairman and main plenary lecturer) 1992: 7th Int. Symposium on Microbial Growth on C₁ Compounds. Warwick. 1994: 3rd International Symposium on PQQ and Quinoproteins (Capri; Main Plenary lecturer) 1994: Gordon Conference on quinoproteins and amino acid cofactors; (Ventura,	1998: Plenary lecturer in Gordon Conference on Microbial Growth on C-1 Compounds in New Hampshire, USA 1998: Invited lecturer in meeting of International Study Group for Tryptophan Research, Hamburg 1998: Plenary lecturer in Gordon Conference on Microbial Growth on C-1 Compounds in New Hampshire, USA 1998: Invited lecturer in meeting of International Study Group for Tryptophan Research, Hamburg 1999: Plenary Lecturer in 2nd International Symposium on vitamin B6, carbonyl catalysis, PQQ and quinoproteins. Santa Fe, USA. 2000: Discussion Leader in Gordon Conference on Molecular Basis of Microbial one-carbon metabolism. (Connecticut, USA). 2002: Organiser of 3rd International Symposium on vitamin B6, carbonyl catalysis, PQQ and quinoproteins. Southampton, UK. 2004: Closing Plenary Lecturer at Gordon Conference on Molecular Basis of Microbial one-carbon metabolism; South Hadley, MA, USA 2005: Member of International Advisory Panel [and Speaker and Chairman]; International Interdisciplinary Conference on Vitamins, Coenzymes and Biofactors; Awaji, Japan. 2007: Closing plenary lecture at Gordon Conference on Molecular Basis of Microbial

California; Main Plenary lecturer) 1995: 8th International Symposium on Microbial Growth on C1-Compounds (San Diego) 1995: Lecturer at Labs in Los Alamos, New Mexico, USA 1996: Plenary Lecturer Jubilee Symposium Mol. Biophysics lab. Indian Institute of Science, Bangalore, India. 1997: Plenary lecturer in Gordon Conference on Quinones and redox active amino acids in Il Ciocco, Italy 1998: Biochemical Society; Lecture in Bioenergetics colloquium, Southampton 1998: Biochemical Society; Lecture in Enzyme colloquium, Leicester	one-carbon metabolism; Magdalen College, Oxford. The lecture was In Memoriam Professor J.R. Quayle.
Periods of study leave, special leave etc. 1982: India (British Council); 4 weeks; Tirupati, Hyderabad. 1984: India (4 weeks teaching) Madras, Tirupati & Central Food & Technology Research Institute, Mysore, India. 1985: UNESCO workshop on biomembranes in Madurai (India) (4 weeks) 1986: University of Moscow and Pushchino USSR (10 days). 1986: University of Chengdu (Sichuan, China), Beijing, Shanghai (4 weeks) 1989: Los Alamos National Laboratory, (New Mexico) (1 week). 1990: Gulbenkian Institute (Lisbon) 1990: Soviet Union Lecture tour (Moscow, Leningrad, Lvov, Kiev) (10 days) 1991: Gulbenkian Institute (Lisbon) 1991: Japan (Tokyo, Yamaguchi, Tottori) as Fellow of the Japanese Society for Promotion of Science (3 weeks) 1992: India (Royal Society; 4 weeks; Tirupati, Madurai & Madras; in Jan.) 1993: India (Royal Society; 4 weeks; Bangalore, Madras, Tirupati; Dec) 1994: India (International Congress of Biochemistry and Molecular Biology, Delhi; sept.) 1995: India (Royal society; 4 weeks; Madras, Tirupati; Dec) 1996: India (The Wellcome Trust; 4 weeks; Bangalore, Tirupati; Dec.) 1997: BBSRC funded lectures in Amsterdam, Delft, Marburg. 1997: India (The Wellcome Trust; Bangalore, Tirupati) 1998; India (Tirupati, Madras, Bangalore). Lectures and writing review. 1999; Japan (Lectures in Tokyo, Kyoto, Yamaguchi; discussion of joint research project in Yamguchi; discussions of Research collaboration in Roche, Tokyo) India (Tirupati, Madras, Bangalore). Lectures and writing research paper. India (Tirupati, Madras, Bangalore). Lectures and writing research paper. India (Tirupati, Madras, Bangalore). Lectures and writing research paper.	India visits from my CV 1982: India (British Council); 4 weeks; Tirupati, Hyderabad. 1984: India (4 weeks teaching) Madras, Tirupati & Central Food & Technology Research Institute, Mysore, India. <i>Also Madurai?</i> 1985: Int. Symp. and on biomembranes, Madurai, India. UNESCO workshop 1987: Int. Symposium on Biochemistry for Development (Karachi) 1987: Lecturer in Atomic Res. Centre, Bombay and Microbiology Dept. Goa. 1992: India (Royal Society; 4 weeks; Tirupati, Madurai & Madras; in Jan.) 1993: India (Royal Society; 4 weeks; Bangalore, Madras, Tirupati; Dec) 1994: India (International Congress of Biochemistry and Molecular Biology, Delhi; sept.) 1995: India (Royal society; 4 weeks; Madras, Tirupati; Dec) 1996: Plenary Lecturer Jubilee Symposium Mol. Biophysics lab. Indian Institute of Science, Bangalore, India. The Wellcome Trust 1997: India (The Wellcome Trust; Bangalore, Tirupati) 1998; India (Tirupati, Madras, Bangalore). Lectures and writing review. 2000; India (Tirupati, Madras, Bangalore). Lectures and writing research paper. 2001; India (Tirupati, Madras, Bangalore). Lectures and writing research paper. 2002; India (Tirupati, Madras, Bangalore). Lectures and writing research paper. I went every year then until 2015. I have no record of financial support. Photos for 85 etc? I have so pics not used on web site for 85b ? NB: I tried to arrange a visit to madurai in 1991/2 but this didn't happen. I went to Japan in December 1991.

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