

I. APPOINTMENTS

1. House Surgeon to the late Professor Digby Chamberlain, General Infirmary at Leeds (May 1952 to October 1952).
2. Demonstrator in Anatomy, University of Leeds (November 1952 to October 1953).
3. Casualty Officer, General Infirmary at Leeds (November 1953 to April 1954).
4. Senior House Officer in Accident and Orthopaedic Surgery, General Infirmary at Leeds (May 1954 to October 1954)
5. House Surgeon to the late Professor Aird, the late Professor Ewing and the late Mr Franklin, Post-Graduate Medical School, London (November 1954 to April 1955).
6. National Service, Surgical Specialist in the R.A.M.C. at Catterick, Tidworth and Gibraltar Military Hospitals (June 1955 to June 1957).
7. Registrar in Accident and Orthopaedic Surgery, General Infirmary at Leeds (July 1957 to September 1958).
8. Lecturer in Anatomy, University of Leeds and Honorary Research Fellow Department of Accident and Orthopaedic Surgery, General Infirmary at Leeds (October 1958 to July 1963).
9. Lecturer in Surgery and Honorary Senior Registrar to the late Professor J C Goligher MS FRCS, University of Leeds (August 1963 to April 1965).
10. Registrar in Orthopaedic Surgery, The Robert Jones and Agnes Hunt Orthopaedic Hospital, Oswestry, Shropshire (May 1965 to September 1965).
11. Senior Registrar in Orthopaedic Surgery, and subsequently Senior Resident Surgical Officer, The Robert Jones and Agnes Hunt Orthopaedic Hospital, Oswestry, Shropshire (October 1965 to April 1968).
12. Professor of Orthopaedics, Institute of Orthopaedics and Honorary Consultant Surgeon, Royal National Orthopaedic Hospital, London (April 1968 to September 1972).
13. Senior Medical Research Fellow, Department of Human Morphology, Medical School, University of Nottingham (October 1972 to September 1974).
14. Professor of Human Morphology and Experimental Orthopaedics, Department of Human Morphology (later incorporated into the School of Biomedical Sciences), School of Medicine, University of Nottingham (October 1974 to August 1993) (Chair endowed by ACTION Research).
15. Honorary Consultant in Orthopaedics, Nottinghamshire Health Authority (T), Harlow Wood Orthopaedic Hospital (October 1974 to August 1993).
16. Emeritus Professor, Faculty of Medicine and Health Sciences, School of Biomedical Sciences, University of Nottingham (September 1993 to present).
17. Honorary Contract, The Centre for Spinal Studies and Surgery, University Hospital, Nottingham.
18. Medical Panel Member, Medical Appeal Tribunal, Nottingham, Lord Chancellor's Department (1985 to July 2003).

II. MEMBERSHIP OF SOCIETIES

Senior Fellow, British Orthopaedic Association.
Emeritus Fellow, International Society of Orthopaedic Surgery and Traumatology.
Honorary Member, British Orthopaedic Research Society.
Member, British Scoliosis Society
Honorary Fellow, British Scoliosis Society April 2009
Member, British Association of Clinical Anatomists.
Member, Society for the Study of Human Biology
Honorary Member, International Research Society of Spinal Deformities.
Director, British Scoliosis Research Foundation (1991-2006).
Co-ordinator, International Federated Body on Scoliosis Etiology (1994-)

III. PRESIDENCIES

President, British Orthopaedic Research Society (1983-4).
President, British Scoliosis Society (1988-89).
President, Oswestrian's Society (1990-1).

IV. INTERNAL EXAMINER (2004-5)

DM (Nottingham) thesis of Mr R.K. Pratt MA FRCS(Orth), FRCS Eng
DM (Nottingham) thesis of Mr A.A. Cole BMed Sci FRCS(Orth), FRCS Eng

V. PUBLICATIONS

Recent peer-reviewed publications

Shi L, Wang D, Chu WC, Burwell RG, Cheng JC. **Abnormal cerebral cortical thinning pattern in adolescent girls with idiopathic scoliosis.** *Neuroimage* 2012 Jan **16;59(2):**935-42. [Epub ahead of print]

Burwell RG, Dangerfield PH, Moulton A, Grivas TB. **Adolescent idiopathic scoliosis (AIS), environment, exposome and epigenetics: A molecular perspective of postnatal normal spinal growth and the etiopathogenesis of AIS with consideration of a network approach and possible implications for medical therapy.** *Scoliosis*. 2011, **6(1):**26. [Epub ahead of print]

Wang WJ, Yeung HY, Chu WC, Tang NL, Lee KM, Qiu Y, Burwell RG, Cheng JC. **Top theories for the etiopathogenesis of adolescent idiopathic scoliosis.** *J Pediatr Orthop*. 2011 Jan-Feb;31(1 Suppl):S14-27.

Shi L, Wang D, Chu WC, Burwell RG, Wong TT, Heng PA, Cheng JC. **Automatic MRI segmentation and morphoanatomy analysis of the vestibular system in adolescent idiopathic scoliosis.** *Neuroimage*. 2011 Jan;54 Suppl 1:S180-8. Epub 2010 Apr 9

Bagnall KM, Grivas TB, Alos N, Asher M, Aubin CE, Burwell RG, Dangerfield PH, Edouard T, Hill D, Lou E, Moreau A, O'Brien J, Stokes I, Weiss HR, Raso J. **The International Research Society of Spinal Deformities (IRSSD) and its contribution to science.** *Scoliosis*. 2009 Dec 22;4:28.

Burwell RG, Aujla RK, Grevitt MP, Dangerfield PH, Moulton A, Randell TL, Anderson SI. **Pathogenesis of adolescent idiopathic scoliosis in girls - a double neuro-osseous theory involving disharmony between two nervous systems, somatic and autonomic expressed in the spine and trunk: possible dependency on sympathetic nervous system and hormones with implications for medical therapy.** *Scoliosis*. 2009 Oct 31;4:24

Shi L, Wang D, Chu WC, Burwell RG, Freeman BJ, Heng PA, Cheng JC. **Volume-based morphometry of brain MR images in adolescent idiopathic scoliosis and healthy control subjects.** *AJNR Am J Neuroradiol*. 2009 Aug;30(7):1302-7. Epub 2009 Apr 22.

Grivas TB, Burwell RG, Mihas C, Vasiliadis ES, Triantafyllopoulos G, Kaspiris A. **Relatively lower body mass index is associated with an excess of severe truncal asymmetry in healthy adolescents: Do white adipose tissue, leptin, hypothalamus and sympathetic nervous system influence truncal growth asymmetry?** *Scoliosis*. 2009 Jun 30;4:13.

Burwell RG, Dangerfield PH, Freeman BJ. **Concepts on the pathogenesis of adolescent idiopathic scoliosis. Bone growth and mass, vertebral column, spinal cord, brain, skull, extra-spinal left-right skeletal length asymmetries, disproportions and molecular pathogenesis.** *Stud Health Technol Inform*. 2008;135:3-52.

Papers presented at British Association of Clinical Anatomists (BACA), Cardiff, UK 19-21 December 2011

Burwell RG, Aujla RK, Grevitt MP, Randell TL, Dangerfield PH, Aujla RK, Cole AA, Kirby AS, Polak FJ, Pratt RK, Webb JK., Moulton A. **In girls with right thoracic adolescent idiopathic scoliosis (RT-AIS) systemic skeletal over-growth is associated with significant correction in three of four upper limb segments and not in lower limb segments.** *Clin Anat*, In press.

Burwell RG, Aujla RK, Grevitt MP, Randell TL, Dangerfield PH, Aujla RK, Cole AA, Pratt RK, Webb JK., Moulton A, Anderson SI, Grivas TB. **Several phenotypic features of girls with adolescent idiopathic scoliosis (AIS) are explained by postulating hypothalamic alterations in two successive normal life-history phase transitions.** *Clin Anat*, In press.

Burwell RG, Dangerfield, PH, Moulton A, Grivas TB. **Adolescent idiopathic scoliosis (AIS), environment, exposome and epigenetics: normal postnatal spinal growth and the etiopathogenesis of AIS.** *Clin Anat*, In press.

Papers presented at BACA/EACA, Padua, Italy 28-30 June 2011

Burwell RG, Aujla RK, Grevitt MP, Randell TL, Dangerfield PH, Cole AA, Kirby AS, Polak FJ, Pratt RK, Webb JK., Moulton A. **Right-handed girls with adolescent idiopathic scoliosis (AIS): abnormal bilateral upper arm length asymmetry is associated with scoliosis curve severity, side and site suggesting pathogenetic mechanisms affecting trunk and upper arms.** *Clin Anat*, In press

Burwell RG, Grevitt MP, Randell TL, Dangerfield PH, Aujla RK, Cole AA, Pratt RK, Webb JK, Moulton A, Anderson SI. **Abnormal bilateral skeletal asymmetries and their putative genetic and epigenetic origins in enantiomorphic growth plates of girls with adolescent idiopathic scoliosis (AIS).** *Clin Anat*, In press

Burwell RG, Aujla RK, Randell TL, Dangerfield PH, Moulton A, Anderson SI.. **Regional skeletal sizes of healthy girls relative to size attained at 10 years as the comparator: percentage size trajectories reveal effects of differential growth consistent with intrinsic growth-plate programs involving time-tally patterning, genetically- and epigenetically-determined.** *Clin Anat*, In press

Burwell RG, Aujla RK, Randell TL, Dangerfield PH, Moulton A, Anderson SI.. **Regional skeletal sizes of healthy boys relative to size attained at 10 years as the comparator: percentage size trajectories reveal effects of differential growth consistent with intrinsic growth-plate programs involving time-tally patterning, genetically- and epigenetically- determined.** *Clin Anat*, In press

Paper presented at 12th International Phillip Zorab Symposium, Royal College of Surgeons, London, 16-18 March 2011

Burwell RG, Aujla RK, Grevitt MP, Randell TL, Dangerfield PH, Cole AA, Kirby AS, Polak FJ, Pratt RK, Webb JK., Moulton A. **A transient, or resolving, bilateral asymmetry process in the pathogenesis of right thoracic adolescent idiopathic scoliosis in girls, suggested by findings of upper arm length asymmetry related to age, curve severity, and years after estimated menarcheal age.** page 60.

Papers presented at BACA, St George's, London 21 December 2010

Burwell RG, Aujla RK, Grevitt MP, Randell TL, Dangerfield PH, Cole AA, Kirby AS, Polak FJ, Pratt RK, Webb JK., Moulton A. **Right thoracic adolescent idiopathic scoliosis (RT-AIS) in girls: abnormal bilateral asymmetry of upper limb lengths involves forearms-with-hands as well as upper arms.** *Clin Anat* 2011, 24(4):530.

Burwell RG, Aujla RK, Cole AA, Randell TL, Dangerfield PH, Moulton A. **Length asymmetries in upper limbs of right- and left-handed healthy girls age 5-18 years: Proximo-distal growth asynchronies, genetics, handedness and epigenetics.** *Clin Anat* 2011, 24(4):529-530.

Burwell RG, Aujla RK, Randell TL, Dangerfield PH, Moulton A. **Suprapelvic height and pelvic height in healthy juveniles by body mass index (BMI): genetic programs intrinsic to growth plates in spine and pelvis may differ by gender, skeletal region and energy availability.** *Clin Anat* 2011, 24(4):530.

Papers presented at BACA, Glasgow 21-22 July 2010

Burwell, RG, RK Aujla, MP Grevitt, TL Randell, PH Dangerfield, A Moulton, SI Anderson. **A new approach to the pathogenesis of adolescent idiopathic scoliosis: interaction between risk factors involving a diverse network of causal developmental pathways.** (Supported by AO). *Clin Anat*.24(3):384.

Burwell, RG, RK Aujla, MP Grevitt, TL Randell, PH Dangerfield, A Moulton, SI Anderson. **Is scoliosis curve initiation and progression contributed to by dysfunction of somatosensory, somatomotor and/or sympathetic mechanisms? New observation and interpretation for the pathogenesis of right thoracic adolescent idiopathic scoliosis.** (Supported by AO). *Clin Anat*. 24(3):384-5

Burwell, RG, RK Aujla, MP Grevitt, TL Randell, PH Dangerfield, AA Cole, AS Kirby, FJ Polak, RK Pratt, JK Webb, A Moulton. **Upper arm length model suggests a transient asymmetry process in the pathogenesis of right thoracic adolescent idiopathic scoliosis (RT-AIS) in girls.** (Supported by AO). *Clin Anat*. 24(3):384.

Burwell, RG, RK Aujla, TL Randell, PH Dangerfield, A Moulton. **In healthy juveniles, body mass index (BMI) correlation with skeletal-sizes-for-age shows topographical distribution that is sexually dimorphic: boys adjusting skeletal growth to energy availability and girls possibly protecting reproductive development?** *Clin Anat.* 24(3):384.

IRSSD Meeting, Montreal July 1-3, 2010, Research into Spinal deformities-7, Edited by Carl-Eric Aubin, Ian F Stokes, Hubert Labelle, Alain Moreau.

Burwell, RG, RK Aujla, MP Grevitt, TL Randell, PH Dangerfield, AA Cole, AS Kirby, FJ Polak, RK Pratt, A Moulton, JK Webb. **Preoperative girls with adolescent idiopathic scoliosis (AIS): systemic skeletal overgrowth patterns probably hormonally-driven revealed in higher and lower body mass index (BMI) subsets.** *Stud Health Technol Inform* 2010, **158:262.**

Burwell, RG, RK Aujla, MP Grevitt, TL Randell, PH Dangerfield, AA Cole, AS Kirby, FJ Polak, RK Pratt, A Moulton, JK Webb. **Girls with right thoracic adolescent idiopathic scoliosis (AIS): lower body mass index (BMI) and evidence suggesting an inverse relation between sympathoactivation and somatotrophic (GH/IGF) secretions.** *Stud Health Technol Inform* 2010, **158:264.**

Burwell RG, Aujla RK, Grevitt MP, Dangerfield PH, Moulton A, Randell TL, Anderson SI. **Pathogenesis of adolescent idiopathic scoliosis in girls. A double neuro-osseous theory involving disharmony between two nervous systems, somatic and autonomic expressed in the spine and trunk: possible dependency on sympathetic nervous system and hormones with implications for medical therapy.** *Stud Health Technol Inform* 2010, **158:212.**

RG Burwell, RK Aujla, MP Grevitt, TL Randell, PH Dangerfield, A Moulton **In normal girls and boys, body mass index (BMI) subsets reveal energy priority of trunk width growth and in the limbs of boys: central mechanisms may have enabled human bipedalism which, in dysfunction, predisposed girls to AIS.** *Stud Health Technol Inform* 2010, **158:246.**

RG Burwell, RK Aujla, TL Randell, PH Dangerfield, A Moulton. **Normal juvenile girls and boys: evidence suggesting central controls for upper arm length and its asymmetry of girls differ from boys which, in dysfunction, predispose girls to adolescent idiopathic scoliosis.** *Stud Health Technol Inform* 2010, **158:261.**

RG Burwell, RK Aujla, TL Randell, PH Dangerfield, A Moulton. **Normal juvenile girls and boys: evidence suggesting central controls for energy allocation to skeletal development of girls differ from boys which, in dysfunction, may predispose girls to adolescent idiopathic scoliosis (AIS).** *Stud Health Technol Inform* 2010, **158:263**

Paper presented at 6th Annual World Congress for Brain Mapping and Image Guided Therapy, 26-29 August 2009, Harvard Medical School, Boston, USA.

Chu WCW, Shi L, Wang D, Paus T, Burwell RG, Man GCW, Cheng A, Yeung HY, Lee KM, Heng PA, Cheng JCY: **Variations of semicircular canals orientation and left-right asymmetry in adolescent idiopathic scoliosis (AIS) comparing with normal controls: MR morphometry study using advanced image techniques.** *6th Annual World Congress for Brain Mapping and Image Guided Therapy, Annual Congress of the IBMISPS, 26-29 August 2009.*