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EDITORIAL

Editorial: Advances in craniosynostosis—Basic science to clinical practice

Craniosynostosis is a serious congenital condition caused by early fusion of the cranial sutures, the joints between the flat bones of the skull. Current treatment involves a multidisciplinary team of plastic and maxillofacial surgeons, neurosurgeons, speech and language therapists, psychologists, orthoptists, dentists, clinical geneticists and other specialists. Scientists from different disciplines are working together to advance our fundamental understanding of the causes and treatment of this condition using a wide range of approaches. This is clearly a joint transdisciplinary effort involving multiple stakeholders with the children and their families at the heart.

Each of the aforementioned groups and disciplines that are engaged in treatment/research on craniosynostosis have their own societies and conferences. Some examples are the International Society of Craniofacial Surgery, the Gordon Research Conference on Craniofacial Morphogenesis and Tissue Regeneration, the European Society for Pediatric Neurosurgery and many others that are increasingly becoming more interdisciplinary.

The idea behind the "Advances in Craniosynostosis – basic science to clinical practice" (AdCr) meeting originated in 2011 when Moazen promised the Royal Academy of Engineering Research Fellowship Scheme "… to organize a workshop on *the use of computational skull models in clinical applications*." As the fellowship progressed it became increasingly clear that there was a need to bring together all the key stakeholders involved in treatment and research on craniosynostosis, including the patients and their families.

The RAEng Fellowship engendered wider interaction with multiple colleagues working on various aspects of craniosynostosis. Prof Michael Fagan, Prof Andrew Willkie, Prof Susan Herring, Mr David Johnson and Prof Michael Cunningham had supported the initial application and through the years that followed this network expanded. This included interaction with the Headlines Craniofacial Support Charity that is run by families affected by craniosynostosis. Moazen's move to UCL enabled wider interaction with many other colleagues including Dr Erwin Pauws and Prof Karen Liu in London and Dr Steve Twigg in Oxford, forming a team to organise the meeting as was envisaged back in 2011.

On 27 July 2018, we organised the first AdCr at UCL. Following the success of that conference, we felt there was sufficient interest and enthusiasm for a regular meeting and the second and third AdCr followed on 27 August 2021, and 25 August 2023, respectively. We are very keen to continue these meetings and to expand them to ensure that we have a united and well-connected community working on craniosynostosis, more so considering that this is still a rather under-funded condition.

The third AdCr meeting celebrated the lifetime impact and achievements of Prof Gillian Morriss-Kay in craniofacial research, as well as her significant contribution to the *Journal of Anatomy*. Hence, we decided to organise this special issue in the *Journal of Anatomy* in her honour and invited colleagues who had participated in AdCr meetings to contribute.

This special issue has a total of 10 contributions that very well reflect the ongoing interdisciplinary research on craniosynostosis and the nature of AdCr meetings. In brief:

1. Iseki and Wilkie comment on the contribution of Prof Gillian Morriss-Kay to the broad field of craniofacial biology.
2. Morriss-Kay reflects on her own career and research.
3. Didziokas et al describe a novel tool to automatically segment the craniofacial skeleton obtained from computed tomography or other imaging techniques.
4. Raoul-Duval et al highlight the importance of the craniocervical junction and how it changes during human craniofacial growth.
5. Ajami et al investigate cranial bone microarchitecture in the Crouzon syndrome mouse model.
6. Walton et al examine the association of a RUNX2 polyalanine deletion polymorphism with non-syndromic craniosynostosis.
7. Herring et al describe the outcome of a potential mechanical treatment option on a large animal model with midfacial hypoplasia.
8. Gaillard et al provide an insight into differences in the brains of patients with non-syndromic metopic synostosis compared to a control group.
9. Abdel-Alim et al present an innovative approach based on machine learning methods to classify craniosynostosis and measure its severity.
10. Hilton reports on the role of fingers in the development of early number concepts and arithmetic activities in children with Apert syndrome.

We hope the wider scientific community find this special issue of interest. We would like to thank: Phil Cox, one of the Editors of the *Journal of Anatomy*, and Edward Fenton, Managing Editor, for their help and patience throughout the production of this issue; the contributing authors for accepting the offer to participate,

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Mehran Moazen[1]
Stephen R. F. Twigg[2]

[1]*Department of Mechanical Engineering, University College London, London, UK*
[2]*MRC Weatherall Institute of Molecular Medicine, John Radcliffe Hospital, University of Oxford, Oxford, UK*

Correspondence
Mehran Moazen, Department of Mechanical Engineering, University College London, London, UK.
Email: m.moazen@ucl.ac.uk

ORCID
Mehran Moazen https://orcid.org/0000-0002-9951-2975
Stephen R. F. Twigg https://orcid.org/0000-0001-5024-049X