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Rise of the molecular age?

Everything these days is getting smaller – from the latest iPad to incisions for surgery, it seems that small is most definitely in. Orthopaedic and trauma surgery has never been known for rapidly evolving techniques or cutting edge biological treatments but small, from nanoscale, to proteins, to cells, is definately 'in vogue' in orthopaedic research circles. Preferring evolution rather than revolution, we have as a profession developed, honed and perfected treatments that often last as long as our patients' life spans. Small iterative changes to fracture fixation, hip replacement, and ACL reconstruction techniques have been proven over decades to bring benefits to patients one step at a time. The recent British Orthopaedic Association (BOA) meeting marked a change in British orthopaedics. For the first time, the BOA offered free registration to members, with more focus on revalidation, continuing professional development and instructional sessions; this was very welcome and members voted with their feet with an attendance of over 2000 delegates.

Although widely approved by the delegates, the focus on revalidation sessions runs the risk of happening at the expense of the presentation of novel scientific research. The focus of orthopaedic research is moving away from retrospective clinical studies, and orthopaedic surgery is being catapulted into the modern molecular age, smaller, it appears, in research, is better. Our understanding of the development of treatments for orthopaedic diseases is moving rapidly through a genetic, molecular and biomarker revolution, which is beginning to be reflected in practice. One of the challenges of future revalidation and instructional sessions will be to synthesise relevant messages from an ever-increasing number of both pre-clinical and clinical studies.

In April 2003 the human race realised one of its greatest achievements and sequenced DNA of the human genome in its entirety. The $3 billion USD project took 13 years to achieve; ten years later the same can be achieved in a few hours for $1500 USD. This rapid change is typified by this month's *360* feature article from **Perth (Western Australia)**. Tracing the origins, applications and challenges of genomics in the modern world, David Wood and co-authors envisage an exciting future where orthopaedic oncology, and indeed perhaps many other orthopaedic diseases, are not only understood from their genomics, but also treatments can start to be applied on a person-by-person, tumour-by-tumour basis. The authors take us on a fascinating journey from the birth of genomics, through to current developments and the tantalising possibilities of future personalised treatments.

The move toward a deeper understanding of the diseases we treat is reflected in this edition of *360*. We have learned this month that biologically 'inactive' non-unions are in fact not a completely 'biological' problem, and that plenty of viable stem cells are present in the tissue.[1] In the world of knee surgery, researchers have potentially identified a cause for that ever-present problem of the painful knee replacement. They established that while patients had similar demographics, there was a marked difference in the cytokines profile.[2] In a similar theme, IL-6 levels have been found to be associated with higher pain scores.[3]

I hope you will enjoy reading this issue of *360* as much as I have enjoyed editing it. My very best wishes to you all.

REFERENCES

1. **Ismail HD, Phedy P, Kholinne E, et al.** Existence of mesenchymal stem cells in sites of atrophic nonunion. *Bone Joint Res* 2013;2:112-15.

2. **Gandhi R, Santone D, Takahashi M, Dessouki O, Mahomed NN.** Inflammatory predictors of ongoing pain 2 years following knee replacement surgery. *Knee* 2013;20:316-18.

3. **Hashimoto S, Rai MF, Gill CS, et al.** Molecular characterization of articular cartilage from young adults with femoroacetabular impingement. *J Bone Joint Surg [Am]* 2013;95-A:1457-64.