

## From the Editor

### Academic Perfusion at Its Best and a New Tradition

Our final issue for 2020 showcases the myriad of ways that our clinical perfusion community conducts academic work that contributes to our practices. The impressive work published here not only shares the knowledge they have generated but also will, I hope, inspire others to partake in the enrichment of our clinical skills and enhancement of our profession.

The first example of such an enhancement that I would like to highlight is that of AmSECT, our sponsoring society, now having a published set of standard and guidelines for pediatric congenital perfusion! Molly Oldeen et al.<sup>1</sup> have

meticulously compiled a much needed, previously non-existent set of standards and guidelines for our colleagues practicing pediatric and congenital perfusion. AmSECT's service to these perfusionists is now on par in this regard with what it provides to adult perfusionists. Furthermore, these standard and guidelines were reviewed and endorsed by both the Congenital Heart Surgeons and Congenital Cardiac Anesthesia societies. With its co-publication in the *World Journal for Pediatric and Congenital Heart Surgery*, these standards and guidelines will be widely available and shared broadly within this specialty. My congratulations to Molly Oldeen and her co-authors who are all well-known, long-time contributors to AmSECT, for their latest accomplishment!

Another group of perfusionists I would like to congratulate and highlight in this issue is Travis Siffring and his Duke University team. They have two publications in this issue,<sup>2,3</sup> not only showing us a new optimized perfusion strategy for Norwood reconstructions but also demonstrating how perfusionists can participate in investigating and innovating along with their physician partners and then share their findings in their respective profession's journals. The work shared in this issue first describes their early *in vitro* evaluation of their sustained total all-region perfusion technique.<sup>2</sup> This is followed by their second article describing the clinical implementation of this technique from the perfusionists' perspective.<sup>3</sup> Also referenced in their work is a third publication by their physician colleagues who described the surgical technique aspect of this effort.<sup>4</sup> Siffring and co-authors should be commended not only for their contributions in developing this technique but also for making that extra effort to share their relevant efforts with our perfusion community through these articles. This is clinically driven academic perfusion done right!



Raymond K Wong of The University of Arizona which resides on the indigenous homelands of the Tohono O'odham and the Pascua Yaqui people.

A lot of investigational activity continues in the area of cardioplegic preservation of the heart, published both in our Journal and others. In this issue, we have two international submissions reporting on opposite domains of the research spectrum. Dr. Kofidis and his perfusion team at the National University of Singapore (my neck of the woods, I spent my formative years in Malaysia) report on a clinical study of del Nido cardioplegia use in their patients,<sup>5</sup> whereas Dr. Gunaydin, partnering with his long-time stateside clinical perfusionist collaborator, Dr. Kevin McCusker, and other co-authors report on a basic science study of the protective effects of cardioplegia using cell culture models.<sup>6</sup> More examples of perfusionists involved in different aspect of academia!

The examples of stellar academic work continue in this issue with Greg Matte who is the chief at Boston Children's Hospital and leads a multidisciplinary team including an

engineer and Dr. del Nido himself in developing an instrumented *ex situ* heart perfusion platform to potentially evaluate and recover dysfunctional donor hearts before transplantation.<sup>7</sup> I am particularly impressed at what I saw as a practical Langendorff apparatus built mostly out of components we normally use for cardiopulmonary bypass as you will see if you take a look at their photos and descriptions. The Langendorff isolated perfused heart preparation has been used to study cardiac physiology for well over a century, but this modern-day version published here enables any other perfusionist or perfusion training program to build their own and conduct all kinds of other studies to improve our clinical practices. Again, the process of academic perfusion at play!

Two other instances of perfusion-led academic work in this issue both dealt with oxygen delivery to patients. Kiser et al.<sup>8</sup> present a prospective quality improvement project to discern the benefits of prescriptive extracorporeal circuit protocols. The other study is solely authored by Dr. Larry Garrison whom I have known for quite a few years now to be interested in exploring the relationship between oxygen delivery and neurological outcomes. In this issue, Dr. Garrison describes a retrospective analysis exploring his hypothesis of just such a relationship.<sup>9</sup> Dr. Garrison is a prime example of a clinical perfusionist, with clinical support experience in industry who had a yearning for academic work, thus going back to school to earn a Ph.D., and is now contributing to our profession!

Finally, our perfusion community is as usual supported by our physician partners who routinely share their academic work in our Journal to propagate findings in our community. In this issue, Dr. Machado and Dr. Gregoric's teams share novel applications for ECMO support,<sup>10,11</sup> whereas our Iranian colleagues led by Dr. Mirmohammadsadeghi share work they conducted to study sleep quality in coronary artery bypass grafting patients using pulsatile vs. non-pulsatile flows.<sup>12</sup>

On another subject, as I am writing this message in November, it happens to be Native American Heritage month. In a very timely recent message on PerfList last week, Gary Grist, CCP emeritus, proposed that we start a tradition of acknowledging the Native Americans and their lands that we live and work on. And so, I hereby acknowledge that I work at the University of Arizona which

resides on the indigenous homelands of the Tohono O'odham and Pascua Yaqui people. This acknowledgement will from now onward always be printed under my photo which clearly shows the southwest lands on which we now occupy. I hope others in our profession will similarly adopt Gary's proposal at the beginning of any talks we give and at any other appropriate opportunity.

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## REFERENCES

1. Oldeen ME, Angona RE, Hodge A, et al; American Society of Extracorporeal Technology. Development of standards and guidelines for pediatric and congenital perfusion practice. *J Extra Corpor Technol.* 2020;52:319–26.
2. Siffring T, Prabhu N, Smigla G, et al. *In vitro* evaluation of flow distribution in all-region perfusion during the Norwood operation. *J Extra Corpor Technol.* 2020;52:261–5.
3. Siffring T, Prabhu N, Evans A, et al. Sustained total all region (STAR) perfusion: An optimized perfusion strategy for Norwood reconstruction. *J Extra Corpor Technol.* 2020;52:332–6.
4. Andersen ND, Prabhu NK, Turek JW. Sustained total all-region (STAR) perfusion for Norwood reconstruction. *Oper Tech Thorac Cardiovasc Surg.* 2020;25:126–39.
5. Goh SG, Hoon CGW, Lim CA, et al. Use of del Nido cardioplegia for adult heart surgery: How long is not too long? *J Extra Corpor Technol.* 2020;52:272–8.
6. Gunaydin S, Akbay E, Guneremt OE, et al. Long-term protective effects of single dose cardioplegic solutions in cell culture models. *J Extra Corpor Technol.* 2020;52:279–88.
7. Duignan T, Guariento A, Doulamis IP, et al. A multi-mode system for myocardial functional and physiological assessment during *ex-situ* heart perfusion. *J Extra Corpor Technol.* 2020;52:303–13.
8. Kiser K, Sandhu H, Miller CC III, et al. Implementation of a prescriptive extracorporeal circuit and its effect on hemodilution and blood product usage during cardiac surgery. *J Extra Corpor Technol.* 2020;52:295–302.
9. Garrison L. Cardiopulmonary bypass mean global oxygen delivery may be associated with neurocognitive preservation during hypothermic aortic surgery. *J Extra Corpor Technol.* 2020;52:289–94.
10. Machado DS, Tule M, Philip J, et al. Bivalirudin and alteplase for pulmonary embolism requiring veno-arterial extracorporeal membrane oxygenation in an adolescent. *J Extra Corpor Technol.* 2020;52:327–31.
11. De Armas IAS, Dinh K, Akkanti B, et al. Tracheostomy while on Extracorporeal membrane oxygenation (TECMO): A comparison of percutaneous and open procedures. *J Extra Corpor Technol.* 2020;52:266–71.
12. Mirmohammadsadeghi A, Jahannama N, Mirmohammadsadeghi M. Sleep quality after coronary artery bypass graft surgery: Comparing pulsatile and nonpulsatile pump flow. *J Extra Corpor Technol.* 2020;52:314–8.